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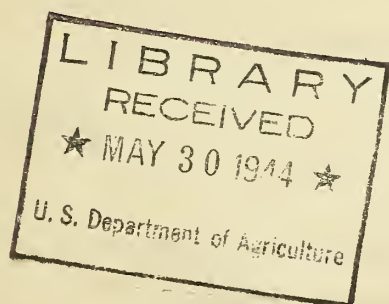
June 1933

## AGRICULTURE OF THE AMERICAN INDIANS

A Classified List of Annotated Historical References with an Introduction

By

Everett E. Edwards, Associate Agricultural Economist  
Division of Statistical and Historical Research  
Bureau of Agricultural Economics



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## INTRODUCTION

The aboriginal American Indian made many contributions to our present-day civilization (9)\*. Not the least of these were his agricultural plants, methods, and processes. It has been estimated that four-sevenths of the total agricultural production of the United States, measured in farm values, consists of economic plants, domesticated by the Indian and taken over by the white man (51-52). In taking possession of the continents of the Western Hemisphere, among the first lands occupied by the Europeans were the clearings made by the Indians for their crude farms (130-132). The whites attempted to use their European crops and methods, but found it necessary to adopt many of those in use among the Indians.

Out of the union of American Indian and European farming came the first solution of the food-quest problem of the colonists and the beginnings of American agriculture. Herein lies the reason we can not ignore the agriculture of the American Indians in any adequate study of the history of agriculture in the United States.

Anthropologists tell us that the remote ancestors of the American Indian came from Asia some ten thousand or more years ago while in the Neolithic stage of development. At that time they had no food supply in the form of domesticated plants and animals, nor did they know how to use metals. Their only implements were bows and arrows, stone axes and knives. The same was true of the tribes who remained behind in the Eastern Hemisphere. Eventually, each group developed a stable food supply from the plants and animals at hand, entirely ignorant of the way the other was solving the same problem (52, 54, 57). In this connection the chronological and economic diagram of the parallelism between the civilizations of the Eastern and Western hemispheres, given by H. J. Spinden in his article entitled "The Population of Ancient America," is of interest (51).

For a long time the descendants of these first immigrants to America knew nothing of agriculture, but eventually tribes in the highlands of Mexico and Central America began the practice of protecting the plants relied on as their main source of food. Then, perhaps considerably later, they began to weed and, in a crude way, cultivate them. Still later, they undertook systematic gathering of seeds and roots for planting in protected areas. This invention of agriculture in the Western Hemisphere which occurred six or seven thousand years ago made possible notable advances in human culture.

The flowering of the Mayan civilization which began about 1000 B. C. was based upon the economic conquest of the humid tropics. The Mayas not only modified the old series of plants to meet wet-land conditions but also domesticated indigenous plants. The cacao plant, representations of whose pods appear as details of several sculptures at Copan dating from the fifth century A.D., was raised and chocolate prepared from its seeds. Other plants were also brought under cultivation, among them the papaya, the anona, the avocado, and the zapote (97-101).

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\* The numbers in parentheses refer to the items with corresponding numbers in the bibliography following the Introduction.

As a result of the gradual spread of the cultivation of maize, beans, and squashes to the north and south, agriculture came to be practiced in widely scattered parts of the Western Hemisphere. The process of distribution was slow, for gradual acclimating of the cultivated plants to localities farther and farther from their original tropical or sub-tropical homes required many centuries. To supplement these non-indigenous plants, however, local plants were brought under cultivation in the several regions. In South America the most important indigenous plant was the potato, a native of the Andes (196). In the Amazon valley, the manioc, the sweet potato, the pineapple, and the peanut were developed as sources of food. For North America, above Mexico, the indigenous food plants similarly utilized were limited to the Jerusalem artichoke and the strawberry. Had it not been for their natural abundance the blueberry and the cranberry would probably also have been domesticated.

Following Clark Wissler, the eminent anthropologist, we may conveniently comprehend the Western Hemisphere, when dominated by the American Indian, as divided into eight major food areas (57). Beginning in the north and coming southward, they may be outlined as follows: the caribou area, a vast territory with Arctic and sub-Arctic characteristics; the salmon area, a section of the Pacific slope, centering in the Columbia River basin; the area of wild nuts and seeds, in California and a portion of the interior; the bison area, to the eastward, embracing the heart of the Northern Continent; the eastern maize area, the region of annual rainfall of twenty inches or more, from the Gulf of Mexico northward to the Great Lakes and the St. Lawrence; the area of intensive agriculture with maize as its main crop, beginning at the Colorado River and extending through the Isthmus and the Andean region to the lower part of Chile; the manioc area, in the interior of South America centering in the Amazon basin, small game and cultivated manioc being the important foods; the guanaco area, in the lower part of the Southern Continent where the chief food was the flesh of the guanaco. The eight areas thus outlined may be grouped as follows: three hunting areas, one fishing area, three agricultural areas, and one, an area of gatherers of wild seeds.

Although flesh was the main food in the three great hunting areas, many vegetal products were also used (57). Even in the Arctic zone where the staple food is meat, the Eskimo gathers berries and edible roots. Likewise, the natives of the caribou area relied on them to a considerable extent. In the bison area, cherries, plums, strawberries, and several species of roots were a part of the food supply. In the guanaco area the natives supplement their meat with the nuts of the Aucaria imbricata, a kind of pine tree, eating them either raw, boiled, or roasted. Here too, the seeds of the algeroba, or mesquite tree, are also used. In the treeless parts of Patagonia, as was true in the more arid portions of the bison area, the prickly pear is utilized. In the interior of the salmon area several species of roots were gathered, dried, and pounded into a food product (57); here the chief root relied on was camas (377).

The most characteristic food in the area of wild seeds, especially in central and southern California, was the acorn (350). It was stored in large basket bins. As tannic acid is present in the acorn, the acid was



removed by pounding the kernels to a flour and then boiling this with lye from wood ashes. After washing out the lye with clear water the meal was made into a kind of bread or cake (57). As supplementary foods, several varieties of wild seeds, roots, herbs, and grasses prevailed. Although sufficient food was available, California was unfavorable to the development of the primitive tribes; the daily routine of gathering food was too arduous and time-consuming to afford leisure for progress.

In the eastern maize area, where the Englishmen, who were the first colonial farmers of the future United States of America, settled, corn was the main agricultural product, although many species of wild plants were utilized (355). For details of the methods and processes employed by the Indians in this area, see the careful treatment of the subject by Philip Alexander Bruce in his *Economic History of Virginia in the Seventeenth Century* (New York and London, 1896), and the summary by Clark Wissler in his article entitled "Aboriginal Maize Culture as a Typical Culture-Complex," in the *American Journal of Sociology*, 21:656-660 (March, 1916), both of these considerations (130, 185), being reprinted in L. B. Schmidt and E. D. Röss, *Readings in the Economic History of American Agriculture* (New York, 1925).

Wild rice was so important in the Great Lakes region as to become almost a staple (215-223). In the northern part of the eastern maize area, the supplementary food crops were squash and beans; in the southern part, melons, gourds, sweet potatoes, and also a kind of millet (8). In the latter section also, tobacco was grown extensively, its cultivation being carried on as far north as the climate permitted (194-214). In addition to the food plants mentioned, maple sugar was an important item of diet, especially in the northern part of the area (192-193). The Indians developed practically every essential detail of the present process of its manufacture. In the south, oil was derived from hickory nuts and walnuts. In some parts of the Atlantic Coastal Plain bread was made from tuckahoe (325), an underground *fungus sclerotium*; along the Gulf coast, persimmons were used for a similar purpose (57). The tribes in the lower Mississippi Valley acquired hogs, chickens, and European fruit trees so early that many explorers reported them indigenous (8, 52).

The area of intensive agriculture was almost entirely within the torrid zone, extending to about 35° on either side of the equator. Within its limits were the most advanced Indian cultures, notably that of the Aztecs, the Mayas, and the Incas (57). In this area hunting was not carried on to the extent that it can be classified as an occupation, and the men as well as the women worked in tilling the fields. To the north, the pueblo peoples of what is now southwestern United States and northern Mexico (110-129), although specializing in corn, gave considerable attention to beans, melons, squashes, pumpkins, onions, chili peppers, and sunflower seeds. Cotton and tobacco were also cultivated (186-191, 197-214). Here too, turkeys were raised for their eggs and feathers as well as for their flesh (57, 255-237). The agriculture of the Nahuas and Mayas to the south was even more highly organized. The Chibcha peoples of Colombia raised maize, potatoes, sweet potatoes, manioc, beans, tobacco, coca, and cotton. The other peoples of Colombia, although they did more hunting, also cultivated corn (57). At the time of the Spanish conquest the adjoining highlands of Venezuela were

occupied by a hunting and maize-growing group. At that time, Ecuador, then partly controlled by the Inca empire, depended on corn as the main source of food except in the highest altitudes, where quinoa took its place. The agriculture of the Inca empire, centering in what is now Peru, was highly organized. Here the plants were about the same as in the Andean region. In favorable places manioc, beans, gourds, ground nuts, tomatoes, guava, and fiber plants were raised (67-92).

In the Amazon basin manioc or cassava took the place of corn, and the other crops commonly grown were tobacco, cotton, and potatoes. Maté or Paraguay tea (41, 57, 295, 339) was a unique product.

The following is a list of the more important plants cultivated by the American Indians prior to the voyage of Columbus in 1492. It may be supplemented by referring to the lists prepared by George K. Holmes (23) and Clark Wissler (57).

| Name  | Area of Cultivation               |
|---|-----------------------------------|
| Agave, or aloe ( <u>Agave americana</u> Linn.)  | Mexico to Chile                   |
| Alligator pear ( <u>Persea gratissima</u> Geartn. f.)   | Central America and West Indies   |
| Arrowroot ( <u>Maranta arundinacea</u> Linn.)   | Tropical America                  |
| Barneyard grass ( <u>Echinochloa crusgalli</u> (L.) Beauv.)                                   | Mexico and southern United States |
| Bean, kidney ( <u>Phaseolus vulgaris</u> Linn.)   | Distribution same as maize        |
| Bean, lima ( <u>Phaseolus lunatus</u> L., var. <u>macrocarpus</u> Benth.)                     | Brazil and Peru                   |
| Cacao ( <u>Theobroma cacao</u> Linn.)   | Tropical America                  |
| Capsicum or Chili pepper ( <u>Capsicum annuum</u> Linn. and <u>Capsicum frutescens</u> Linn.) | Tropical America                  |
| Coca, or cocaine ( <u>Erythroxylum coca</u> Lamarck)  | Peru and Bolivia                  |
| Corn (See maize)  |                                   |
| Cotton ( <u>Gossypium barbadense</u> Linn.)   | Tropical America                  |
| Gourd ( <u>Cucurbita pepo</u> var. <u>ovifera</u> Linn.)                                      | Distribution same as maize        |
| Guava ( <u>Psidium guajava</u> Linn.)   | Tropical America                  |
| Jerusalem artichoke ( <u>Helianthus tuberosus</u> Linn.)                                      | Mississippi Valley                |
| Maize ( <u>Zea mays</u> Linn.)  | See map on p. 20 of Wissler (57)  |
| Manioc ( <u>Manihot utilisima</u> Pohl.)  | See map on p. 20 of Wissler (57)  |
| Maté or Paraguay tea ( <u>Ilex paraguariensis</u> St. Hil. and <u>Ilex concarpa</u> Reiss.)   | Paraguay and western Brazil       |
| Papaw ( <u>Carica papaya</u> Linn.)   | Brazil                            |
| Peanut ( <u>Arachis hypogaea</u> Linn.)   | West Indies and Central America   |
| Pineapple ( <u>Ananas sativus</u> Schult. f.)   | Peru and Brazil                   |
| Potato ( <u>Solanum tuberosum</u> Linn.)  | Mexico and Central America        |
| Prickly pear or Indian fig ( <u>Opuntia ficus-indica</u> Mill.)                               | Chile and Peru                    |
| Pumpkin ( <u>Cucurbita pepo</u> Linn.)  | Mexico                            |
| Quinine ( <u>Cinchona calisaya</u> Wedd.)   | Temperate North America           |
| ( <u>Cinchona officinalis</u> Linn.), and others  | Bolivia and Peru                  |
| Squash ( <u>Cucurbita maxima</u> Duchesne)  | Bolivia and Peru                  |
| Sweet potato ( <u>Ipomoea batatas</u> Poir.)  | Tropical America                  |
| Tobacco ( <u>Nicotiana tabacum</u> Linn.) and other species                                   | Temperate America                 |
| Tomato ( <u>Lycopersicum esculentum</u> Mill.)  | See map on p. 26 of Wissler (57)  |
|   | Peru                              |



Too much emphasis can not be placed upon the fact that American Indian agriculture centered in corn (135-185, especially 136, 150, 176), - one or more of its distinct types, namely dent, flint, flour, sweet, and pop corn, being grown almost everywhere. As a rival manioc was successful only in localities where the climate was too moist for corn. Quinoa displaced it in the highest altitudes of the Andes.

Investigations made thus far seem to show that maize was developed from a wild grass of the Maya habitat (145-148, 162, 175), and this deduction seems logical since distribution of varieties from this center would account for the uniformity of its culture (57, 185). The data at hand indicate that the distinct types or kinds of corn were already in existence when Europeans discovered America and that they were grown side by side in the same fields (57, 151, 158). There was, of course, considerable local adaptation of the widely scattered varieties. Certain of them had been perfected by the Hidatsa of the upper Missouri to ripen within the limits of their short growing season (136, 184), and the Pueblo tribes of Arizona and New Mexico had developed varieties with long, deep-growing roots to reach the moisture in their arid fields (140, 148, 167). "The time required to stabilize all these forms and the subsequent precision of domestic routine that preserved their racial integrity to the present among some of the surviving natives, is one of the most impressive facts" in the history of corn (57). The Indians had many ways of preparing corn for eating; for the most part, our present-day methods are those originally developed by the Indians (5, 176), a striking illustration of how completely the white colonist absorbed the maize complex (185).

As with corn, so with beans and squashes, both were carried far from their wild types and given a wide range in climatic adaptation. In fact, the range for all three is wider than that of any comparable plants originating in the Eastern Hemisphere. "Squashes and pumpkins are tremendously differentiated yet there are believed to be only two basic species. Also there are two basic species of the legumes we now call beans, namely the Phaseolus vulgaris and the Phaseolus lunatus, but out of these come more varieties than can be mustered by the peas and lentils of the old world ...." (52).

Planting corn, potatoes, beans, and other plants of New World origin in hills and then heaping the earth about their stalks during cultivation is still a fundamental process in our present-day farming just as broadcast seeding is essential in growing the grains of Old World origin. In growing their crops, the Indians had neither draught animals nor plowing machinery; all the work was done by hand. Pointed and spade-like tools were used in turning the soil. Only a single digging stick was used in the eastern United States. Here, and also in the West Indies, crude hoes were made from shells or bones. In the area of intensive agriculture, the spades were provided with foot-rests to facilitate their use.

Artificial fertilization was practiced from Nova Scotia to Chile. One of the most widely prevalent methods was to place fish in the corn hills during planting (108, 152). In parts of the area of intensive agriculture manures were used.

Irrigation was undertaken from Arizona to Chile, and in Peru it was carried out on a scale scarcely equalled by modern peoples. The remains of the aqueduct systems of the Inca empires in the Andes show genius and organization we of today may well respect.

The Indians had few domesticated animals. The dog was the only one practically universal among them, and he was used for transportation, hunting, protection and companionship, or food, the use differing according to locality. Use for transportation was limited to the caribou and bison areas and narrow fringes of adjoining regions. Mexico and the pueblo region had no land transport except human carriers, but farther south in the Andes the Incas had llamas and alpacas. The llamas were raised in herds, sometimes numbering thousands, and were not only used in transportation but sheared for their wool and slaughtered for their flesh. The use of milk, however, was unknown to the tribes of the Americas (57). Other domestications include the guinea pig by the Incas, the turkey by the tribes of Mexico and southwestern United States (235-237), and the keeping of bees by the Aztecs, Mayas, and certain of the lesser tribes (57, 224).

The introduction of domesticated animals from the Old World resulted in important changes in the life of the Indians. Mules and donkeys were introduced by the Spaniards in the intensive maize area. Cattle, brought from Europe, eventually became wild and overran Texas and southern California, and in the Pampas they became almost as numerous as the bison on the Great Plains of the northern continent. Their presence greatly modified the food supply, and in so doing, also changed the living habits and status of the Indians. The introduction of horses effected an even more drastic change in Indian life. By direct instruction or by self-initiated imitation, the natives of the bison and guanaco areas acquired the technique of rearing and training horses, and to a certain extent their use spread from these two regions. They were common in the more open parts of the eastern maize area. The greatly increased mobility incident to their use tended to rapidly revert the Indians from agriculture to hunting (226-234).

Following the discovery of America many of the medicines used by the Indians became popular in Europe. While some of these are now regarded as having little or no therapeutic value, others are still of prime importance. At the time, Europeans regarded guayacum wood or lignum vitae and sarsaparilla as the most important. Another so-called remedy which became popular in Europe was Mexican jade as a cure for kidney diseases. Tobacco and copal were also introduced as medicines. Cascara sagrada and quinine have proved their merit as remedies, the latter being the most valuable medicine for assistance in reclaiming the fever-ridden tropics (52).

The Indians had also discovered and developed a number of excellent dyes (52). Chief among these was that made from the cochineal, an insect from southern Mexico, domesticated and grown on the nopal or prickly pear cactus. Another important Indian dye, the result of domestication, was añil, or American indigo. In Central America the Indians also used the secretion of the murex shell fish as a purple dye.

At each stage of the white advance there was contact with the natives; this resulted in mutual contributions, some constructive, others destructive (9, 15). The Indian trails, particularly those along the ridges and through mountain gaps, marked routes for the pioneers from the earliest days and even to the era of the railroads. The same is true of



the portages connecting the natural waterways. The sites of the Indian villages, having been dictated by geographic factors, are in many instances those of our present-day cities. The reports of the fur traders, on their return from the Indian villages and fairs to the white outposts, concerning the lands they had seen, served as a magnet to draw the land-hungry and the restless on and on into the interior. Indian sign languages developed because of intertribal trade, proved useful to the whites, and Indian wampum was occasionally adopted as a medium of exchange.

The impact of the white men in the Americas scattered the Indians. As has been said, the introduction of horses tended to turn many of them from agriculture back to hunting. Acquisition of firearms greatly increased their efficiency in this pursuit and also in fighting their fellow natives and resisting the white advance. Contact with products of European civilization created new wants in the Indians. Some of these desires the traders satisfied and in so doing broke the self-sufficiency of the Indians. European intoxicants debased them. Diseases hitherto unknown among the Indians became wide spread, in many cases so decimating their ranks as to be a vital factor in the rate of white conquest. In Canada and particularly in Latin America intermixing of whites and natives has created a hybrid people sufficiently numerous to make them an important element of the population. In the United States, the Indians who are for the most part on reservations, remain a problem (238-286).

The Indians gave the Europeans new foods such as succotash, pone, hominy, sagamity, suppawn, pemmican, jerked beef, and maple sugar. They contributed ideas and devices relating to the use of weirs, poisons, and torch-lights in fishing, and the technique of "calling" moose, trailing and capturing game animals, and making their flesh palatable. From the Indian the white man learned canoeing, tobogganing, snowshoeing, and lacrosse. Their contributions also include names for places, and the Indian words, phrases, and expressions which have been incorporated into European languages (9).

When an Indian tribe or nation possessed strategic passes or gaps, its relative strength determined the length of time it was able to block the natural line of approach and thus check the white man's advance. In such instances the tribe became an important factor in the struggle of the European nations for domination of the New World; and it is the reason that attempts were made to treat the Indians as quasi-subjects. The danger from hostile tribes was probably a decided influence toward nationalism; certainly the danger promoted community cohesiveness and was a damper on the tendency toward scattered settlements.

The bibliography on the Agriculture of the American Indians which follows is a revision and extension of parts of the section on Indian Contributions to American Agriculture in the present compiler's "A Bibliography of the History of Agriculture in the United States," issued by the United States Department of Agriculture as its Miscellaneous Publication No. 84 (Washington, 1930). An attempt has been made to make the list inclusive to January 1, 1932. Suggestions of pertinent additions to the following list will be appreciated.

## FOREWORD TO SECOND EDITION

Since the issuance of the first edition in May, 1932, a number of items have been published which have a place in this bibliography. These, together with some items not discovered prior to the first edition, are given under the heading Addenda, p. 79-94. Their citation numbers have been incorporated in the index and in the cross references. A few minor corrections have been made in the text as it appeared in the first edition.

Everett E. Edwards

June, 1933.

# AGRICULTURE OF THE AMERICAN INDIANS

## I

### General Historical References

Amsden, Charles.

The first farmers of America. The Masterkey, 3 (2):5-12; (3):13-17 (July, August, 1929). (1)

The Masterkey is published by the Southwest Museum, Highland Park, Los Angeles, California.

This comprehensive summary of the subject is reprinted in the Stone & Webster Journal, 47:69-81 (July, 1930).

Atwater, Helen W., and C. F. Langworthy.

America's gifts to the Old World; a pageant or masque for home economics students. Baltimore, American home economics association, 1915. 20 p. (Richards memorial fund publication). (2)

"The Pageant or Masque is designed to emphasize the fact that the New World gave to the Old many new fruits, vegetables, grains, ornamental plants, dyestuffs, and other things valuable for daily use, as well as some new useful arts and new sports which were learned from the Indians...."

Blackburn, Glen A.

The white man took more than the land; he acquired crops and tillage methods from America's first farmer, the Indian. Wallaces' Farmer, 54 (31):7 (Aug. 2, 1929). (3)

Branegan, James A.

Chemistry and science in prehistoric America. Journal of Chemical Education, 2:588-592 (July, 1925). (4)

One section of three short paragraphs is devoted to the agriculture of the Indians.

Capitan, Louis, and Henri Lorin.

Le travail en Amérique avant et après Colomb. (Publiée sous la direction de Georges Renard) Paris, Librairie Félix Alcan, 1930. 463 p. (5)

Review by Gustave Lanctôt in the Canadian Historical Review, 12:432-433 (December, 1931).

The 1930 edition has not been examined.

In the 1914 edition, see the section on agriculture in Mexico, p. 40-48. Also part 2, book 1, French Canada, ch. 3, p. 213-234.

Carr, Lucien.

The food of certain American Indians and their methods of preparing it. American Antiquarian Society Proceedings (1895) 10 (pt.1):155-190. (6)  
Footnotes.

See also the same author's article entitled "Food of North American Indians," in Lend a Hand, 15:347-354 (November, 1895).



Carr, Lucien.

The mounds of the Mississippi Valley, historically considered. Smithsonian Institution Annual Report, 1891:503-599. (7)

Bibliographical footnotes.

See especially p. 507-533 on the Indian as an agriculturist.

Carrier, Lyman.

The beginnings of agriculture in America. New York, McGraw-Hill book co., 1923. 323 p., illus. (8)

Bibliography, p. 308-312.

Note the following chapters: 3, American Indians, p. 20-25; 4, Natural vegetation in Eastern America, p. 26-40; 5, Indian agriculture, p. 41-52; 6-7, Indian crops, p. 53-78; 8, South and Central American Indian crops, p. 79-89; 9, Miscellaneous Indian products and practices, p. 90-101.

See also the same author's article entitled "Indian Agriculture," in Southern Agriculturist, 59 (4):16-17 (Feb. 15, 1929).

Chamberlain, Alexander F.

The contributions of the American Indian to civilization. American Antiquarian Society Proceedings (1904) 16:91-126. (9)

A valuable summary of the contributions of the American Indian, other than agricultural, to civilization.

Cook, Orator Fuller.

The debt of agriculture to tropical America. Bulletin of the Pan American Union, 64:874-887 (September, 1930). (10)

Reprinted in the Smithsonian Institution Annual Report, 1931:491-501, illus. Summary by Caroline B. Sherman in the Social Science Abstracts, 3:4117 (March, 1931).

The following topics are considered: domestication of American plants; interchange of crops; tropical agriculture in the United States; maize our preponderant crop; food habits difficult to change; valuable cottons from Mexico; domestication of quinine and rubber; our tropical heritage.

The illustrations include views of the following: terraced gardens in the Peruvian highlands; ear and kernels of the Cuzco type of maize from the middle farming zone of Peru at elevations between 8,000 and 11,000 feet; ears and kernels of the Pigmy maize of the highest altitudes on the islands and slopes around Lake Titicaca; a field of Acala cotton in southern California; a mature plant of Acala cotton, showing abundant fruiting habit; open boll and combed fiber and seeds of Acala cotton; tapping a Hevea or Para rubber tree in a small plantation on the north coast of Haiti.

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Food plants of ancient America. Smithsonian Institution Annual Report, 1903:481-497. (11)

A revision of the author's article entitled "The American Origin of Agriculture," in Popular Science Monthly, 61:492-505 (October, 1902). A condensation of this earlier version appeared in Current Literature, 34:73-75 (January, 1903).

Dixon, Roland B.

The building of cultures. New York and London, Charles Scribner's sons, 1928. 312 p. (12)

See the discussion of the problems of the origin and development of American prehistoric cultures and the different theories of diffusion.

Du Bois, Constance Goddard.

The primitive Indian as an agriculturist. Southern Workman, 35: 500-503 (September, 1906). (13)

Farrand, Livingston.

Basis of American history, 1500-1900. New York and London, Harper & bros., 1904. 303 p., maps. (The American nation: a history, edited by A. B. Hart, v. 2). (14)

Critical essay on authorities, p. 272-289.

See p. 70-262. These pages include the following chapters: 6, Classification and Distribution of the American Indians (1500-1900); 7, The Eskimo and the North Pacific Indians (1500-1900); 8, The Indians of the Northern Interior and the Lower Pacific Coast (1800-1900); 9, The Indians of the Great Plains (1700-1900); 10, Northern tribes of the Eastern Woodlands (1600-1900); 11, Southern tribes of the Eastern Woodlands (1600-1900); 12, Indian tribes of the Southwest and of Mexico (1500-1900); 13, Social organization of the Indians (1500-1900); 14, Indian houses, house life, and food quest (1500-1900); 15, Indian industrial life and warfare (1500-1900); 16, Indian religion, mythology, and art (1500-1900); 17, Character and future of the Indians (1904). Ch. 18 is a bibliography of the older works. The map between p. 90 and 91 indicates the location of the Indian tribes.

Faulkner, Harold Underwood.

American economic history. New York and London, Harper & bros., 1924. 721 p., maps (Harper's historical series, edited by G. S. Ford). (15)

See p. 7-9 on the influence of the character and distribution of American native products on the early settlers; p. 57-60 on the agricultural achievements of the American Indian; and p. 126-128 on Indians and the early westward movement.

Fiske, John.

The discovery of America; with some account of ancient America and the Spanish conquest. Boston, Houghton, Mifflin & co., 1891. 2 v. (16)

See parts of v. 1, ch. 1, Ancient America, especially the paragraphs on the following marginal headings: Importance of Indian corn, p. 28; Tillage with irrigation, p. 29; Distinction between horticulture and field agriculture, p. 48; Effect of pastoral life upon property and upon the family, p. 61-63; Horticulture with irrigation, p. 83.

Gabriel, Ralph Henry.

Toilers of land and sea. New Haven, Yale university press; [etc.], 1926. 340 p., illus., maps. (The Pageant of America, edited by R. H. Gabriel, v. 1.) (17)

See p. 29-32 for seven paragraphs on the agriculture of the Indians of Virginia and New England. Illustrations showing an Indian village in Virginia with its fields, Indians planting corn, a Virginia harvest, Indians storing corn, Indians making maple sugar, and Squanto teaching the principles of corn culture, accompany these paragraphs.

[Gregory, Clifford V.]

Farming through the ages; the first farmers of America. *Prairie Farmer*, 101:77 (Jan. 19, 1929). (18)

The fourteenth installment of the series entitled "Farming Through the Ages." There are pictures of agricultural implements made and used by early North American Indians; a digging and planting stick, rakes, hoes, shoulder blade hoe with decoration, a winnowing basket, and a pick made of a jaw bone are shown. Also pictures of ancient Maya pottery, - a jug representing a gourd or melon, one personifying corn, and a bowl containing peanuts "just as they were left centuries ago in a Maya tomb."

Grinnell, George Bird.

Tenure of land among the Indians. *American Anthropologist*, 9:1-11 (January-March, 1907). (19)

Hermant, Paul.

*Évolution économique et sociale de certaines peuplades de l'Amérique du Nord*. Paris, 1904. 110 p. (20)

The following topics are discussed: economic conditions, houses, arts and industries, hunting and fishing, agriculture, social and political conditions, family and marriage.

Brief review in the *Review of Historical Publications Relating to Canada* (1905), 10:183-184.

Herndon, C. A.

A dinner from the Indians. *Mentor*, 12 (2):52 (March, 1924). (21)

A menu for an all-American dinner is given. "The main ingredient of every dish on this bill of fare originated in the Americas and had been won from the wilds by Indians before white men put foot on the continent."

Hodge, Frederick Webb, editor.

*Handbook of American Indians, north of Mexico*. Washington, Govt. print. off., 1907-1910. 2 v., illus., folded map. (Smithsonian Institution. Bureau of American Ethnology. Bulletin 30). (22)

Part 1, published also as House Document 926, part 1, 59th Congress, 1st session, Serial 5001.

Bibliography, part 2, p. 1179-1221, and a bibliography with each important subject.

This handbook combines the features of a dictionary, cyclopedia, gazetteer, and bibliography of things pertaining to the aboriginal inhabitants of North America north of Mexico. The folded map at the end is important; it shows the regional distribution of the Indians and the barriers which the various tribes made to the white advance. It is reviewed by Clark Wissler in the *American Anthropologist*, 9:403-405 (April-June, 1907). Also reviewed in *Historical Publications Relating to Canada* (1907) 12:160-161.



Consult such topics as the following: agriculture; cotton, by Walter Hough; domestication; food; gourds; irrigation; maize, by Cyrus Thomas; tobacco, by Joseph D. McGuire; wild rice, by Alexander F. Chamberlain; hoes; implements and utensils; spades; etc.

Holmes, George K.

Aboriginal agriculture - the American Indians. Cyclopedica of American Agriculture, edited by L. H. Bailey, 4:24-39 (New York, Macmillan co., 1912). (23)

Bibliographical notes at end of article.

Particularly noteworthy is the list of plants used by the Indians before the advent of the whites. p. 25-29.

Huntington, Ellsworth.

The red man's continent; a chronicle of aboriginal America. New Haven, Yale university press; [etc.], 1921. 183 p., illus. (Chronicles of America, edited by Allen Johnson, v. 1). (24)

See ch. 5, The Red Man in America, p. 188-172. Also the bibliographical note, p. 173-175.

See also the same author's article entitled "The First Americans," in Harper's Magazine, 122:451-462 (February, 1911).

Jonks, Albert Ernest.

Faith as a factor in the economic life of the Amerind. American Anthropologist, 2:676-689 (October-December, 1900). (25)

Introduction; some beliefs affecting production; some beliefs affecting distribution; some beliefs affecting consumption.

Jones, Charles Colcock.

Antiquities of the Southern Indians, particularly of the Georgia tribes. New York, D. Appleton & co., 1873. 532 p., illus. (26)

See especially the following sections: Medicinal plants, p. 34; Tenure of property, p. 40; Agricultural pursuits, p. 40; Town plantations and private gardens, p. 40; Public granaries, p. 41; Animal and vegetable food, p. 42. Also Agriculture and agricultural implements, p. 296-320.

Kinney, Clesson S.

History of ancient irrigation in various countries. Irrigation Age, 33 (3):86-89 (May, 1918). (27)

"This article was written for The Irrigation Age in the early nineties by the late Judge Clesson S. Kinney of Salt Lake City, who in his day was considered one of the best informed men in irrigation law and history in the United States." About one-half of the article is devoted to ancient irrigation in the New World.

Lantis, L. O.

The first American farmers; authentic accounts of the Red Men's agriculture. Ohio Farmer, 164 (3):60-61 (July 20, 1929). (28)

Lantis, L. O.

First Americans' food and cookery: interesting data gleaned from ancient chronicles. *Ohio Farmer*, 164 (4):80-81 (July 27, 1929). (29)

Lowie, Robert Harry.

The inventiveness of the American Indian. *American Mercury*, 24:90-97 (September, 1931). (30)

MacLeod, William Christie.

The American Indian frontier. New York, Alfred A. Knopf, 1928. xxiv, 598 p., illus., maps (History of civilization...historical ethnology). (31)

Bibliography, p. 565-595.

"This volume represents the first attempt at an analysis of American frontier history made particularly from the viewpoint of the Indian side of frontier development." It is a study of the impact of European civilization on the American Indians. For reviews, see the *Canadian Historical Review*, 10:73-75 (March, 1929); and the *English Historical Review*, 44:326-327 (April, 1929).

In Part 1, The Indians, the chapter titles are as follows: 1, The origin of the Indian; 2, How the Indian lived (numerical strength; economic pressure; ownership of land; private ownership; social classes and slavery; political society; the Indian's industrial disadvantages); 3, How the Indian tried prohibition but drank too much; 4, Smallpox and other diseases among the Indians; 5, The pre-Columbian discoveries and the meaning of Columbus.

In Part 2, The Conquerors:- 6, Spanish aims in the Americas; 7, The Spaniards kill off the first Indians and replace them with negroes; 8, They put the rest to work; 9, The Catholic missions: from Canada to Paraguay; 10, Enslavement of Indians in Latin America: a retrospect; 11, The business corporation takes a hand in empire building.

In Part 3, The Trader:- 12, The Indian trade and the French policy in North America; 13, Celt and Indian; Britain's Old World frontier in relation to the New; 14, Old Virginia and New England, 1606-1633; 15, Jacob and Esau; or why the Europeans bought Indian land; 16, Wars of 1637-1644, north and south; 17, King Philip's War and Bacon's Rebellion, 1675-1676; 18, The end of the Coast tribes, 1711-1742; 19, The Iroquois Republic, its rise and fall, 1607-1754.

In Part 4, Social Retrospects; Contrasts Between the Latin and Anglo-Saxon Americas:- 20, The Indian labour supply, free and slave, and Negro slavery; 21, Other compulsory Indian labour, North and Latin America compared; 22, The mission system, and the failure in North America; 23, Indian against Indian, the price of freedom; 24, The origin of hate, race prejudice in North and Latin America; 25, Segregation of races in reservations in Latin America and early North America.

In Part 5, The Sweep of Empire:- 26, The French War and its effects, 1754-1763; 27, Pontiac and his beaver war, 1763-1765; 28, Tecumseh, the Metcator, and his background, 1774-1814; 29, The rise of the great reservation system; 30, The eastern tribes moved to the Great Plains; 31, The Indian country of the Plains; 32, The destruction of the West Coast tribes; 33, The revolt of the Plains Indians; 34, The red cry for a savior; 35, The messiah and the forerunner. Conclusion, the liquidation of the Indian problem in the United States.



MacLeod, William Christie.

Debtor and chattel slavery in aboriginal North America. American Anthropologist, 27:370-380 (July, 1925). (32)

Footnotes.

The available data on slavery among the agricultural tribes of North America.

Mason, J. Alden.

The Papago harvest festival. American Anthropologist, 22:13-25 (January-March, 1920). (33)

Footnotes.

A description of the Vigita or harvest festival of the Papago Indians of the Santa Rosa Valley, held the last of November, supposedly every four years.

Merrill, E. D.

The Phytogeography of cultivated plants, in relation to assumed pre-Columbian Eurasian-American contacts. American Anthropologist, 33: 375-382 (July-September, 1931). (34)

Summary by E. B. Renaud in Social Science Abstracts, 4:101 (January, 1932).

"The diametrically opposed theories of early Eurasian influences versus an autochthonous civilization in America," have led the author "to approach the subject from a point of view that has curiously been overlooked, ignored, or minimized by proponents of the Eurasian influence idea, and by most or all popular writers on ethnological subjects bearing on this question, and that is from the standpoint of the origins of cultivated plants and domestic animals, or in other words the origins of agriculture. These points have been considered by some ethnologists who have realized their full significance, but many seem to have avoided anything approaching the field of biography." His conclusion is that "the biological-agricultural evidence is wholly and unmistakably in support of an autochthonous development of the pre-Columbian civilizations in America, with no Eurasian contacts or influences shaping or developing them."

Nordenskiöld, Erland.

The American Indian as an inventor. Royal Anthropological Institute Journal, 59:273-309 (July-December, 1929). (35)

Bibliography, p. 307-309.

The Huxley Memorial Lecture for 1929.

An elucidation of the important problem of independent inventions and culture loans.

Summary with the same title in the Scottish Geographical Magazine, 47:39-40 (Jan. 15, 1931).

The illustrations are of the following: manioc graters; cigar holder; vessel with a hollow rim; flutes; hearth stones of baked clay; barbed fish hook; wooden spurs; sugar mill.

Olin, Walter Herbert.

American irrigation farming; a systematic and practical treatment of every phase of irrigation farming, including its history, with statistical tables and formulas. Chicago, A. C. McClurg & co., 1913. 364 p., illus.

(36)

Bibliography, p. 349-355.

See ch. 1 (p. 3-31) which is a brief historical sketch of irrigation. P. 8-12 deal with ancient irrigation in the Americas.

Payne, Edward John.

History of the New World called America. Oxford, Clarendon press, 1892-99. 2 v.

(37)

V. 1, bk. 2, and v. 2 deal with aboriginal America, chiefly the conditions of life among the Indians as the result of natural conditions especially the nature of the food supply and the lack of useful domestic animals.

In v. 1, note particularly the discussions with the following marginal headings: Artificial production of food- (savagery, barbarism, and civilization: food and the food-surplus; method of artificial production; prevalence of savagery in the New World accounted for; unequal value of food-animals and plants in relation to advancement; the dog in relation to advancement; poverty of the New World in animals capable of domestication; absence in New World of milch animals; effect of milch animals on population), p. 276-292; The llama- (antiquity of its domestication; basin of Lake Titicaca; economical value of the auchenias; minor domesticated animals; conversion of the auchenias into an artificial basis of subsistence; groups of alimentary vegetable species), p. 292-304; Alimentary vegetables of Old and New World compared (fruits in relation to advancement), p. 304-310; Cultivation of roots prior to that of cereals- (The potato; roots superseded by cereals; advanced root-culture, desiccation; instance of a root-cultivating population- Hayti; Manioc cultivation in Hayti; social condition of Hayti; Haytian religion; labour involved in the culture of vegetable species), p. 310-320; Cereal agriculture in the New World- maize (origin of maize-cultivation- Mexico and Central America; other centres of maize-agriculture probable; obstacles to maize-cultivation; maize in South America- Paraguay and Southern Peru; Cañari legend of the origin of maize-cultivation; Northern Peru and New Granada; centres of artificial food-production in America; migratory and stationary food-production; primitive agriculture in America; transition to permanent agriculture; surface-tillage in Eastern North America; natural surface-tillage on the Pacific side; cultivation of maize in relation to temperature; artificial extension of cultivable lands, terraces of Peru; minor extensions of cultivable areas; irrigation; irrigation for the purpose of warping; manuring; formation of the calendar; calendar feasts; modes of determining the solstices; art of masonry), p. 320-354; Extension of agriculture to non-alimentary and sub-alimentary plants (agriculture and intoxicants; agriculture and drunkenness; extensions of agriculture, chilli pepper; the cotton plant; the American aloes; the pulque aloe; reduction of the aloe to cultivation; saccharines from the aloe and maize; the cacao-tree; historical importance of the cacao tree; cacao the first object of special tropical agriculture; cacao, coffee, and tea; the Chian plant; the oil Chian; the coca-tree), p. 362-389; Agriculture and religion, p. 389-433.



Pénard, Rev. J. M.

Land ownership and chieftaincy among the Chippewayan and Caribou-eaters. *Primitive Man*, 2 (1-2):20-24 (January, 1929). (38)

A brief note on land ownership among the little-known Chippewayan, an Athapaskan-speaking tribe of northern Saskatchewan and Alberta. A note by Father John Cooper summarizing the data in old sources on northwestern tundra land tenure, and indicating its significance in relation to the similar land tenures of the northern Algonkian is also included.

Powell, E. P.

The Indians as gardeners. *Country Life in America*, 29 (6):130, 132 (April, 1916). (39)

Powell, J. W.

The North American Indians. The United States of America, edited by Nathaniel Southgate Shaler, 1:190-272 (New York, D. Appleton & co., 1894). (40)

See especially Subsistence of the Indians, p. 245-249; Domestication of animals by Indians, p. 249-251; Indian technology, p. 251-256.

Safford, William Edwin.

Food plants and textiles of ancient America. International Congress of Americanists, 19th, Washington, 1915, Proceedings, p. 12-30. Washington, 1917. (41)

Also published in the Pan American Scientific Congress Proceedings, 2d, Washington, December 27, 1915, to January 8, 1916, v. 1, sec. 1, Anthropology, p. 146-159. Washington, Govt. print. off., 1917.

An illustration showing a display in the United States National Museum of terracotta funeral vases representing food products, from ancient Peruvian graves of the coast region near Trujillo and Chimbote, and four of individual vases accompany this version. Its sub-headings are: maize; quenua; beans; lupines; peanuts; other legumes; bromeliaceae; gourds; squashes and pumpkins; annonaceae; lucumas; pepinos; Cyphomandias; almonds of Chachapoyas; Capsicum peppers; Pichurim beans; balsam of Peru; seeds used as rattles; roots and tubers; coca; chocolate; Ilex paraguayensis (Yerba mate); nicotiana tabacum (tobacco); Cohoba, the narcotic snuff of Hispaniola; other narcotics; textiles; cotton; Furcraea fiber.

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Foods discovered with America. *Scientific Monthly*, 21:181-186 (August, 1925). (42)

The menu composed entirely of dishes made up of foods discovered with America is of considerable interest.

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The isolation of ancient America as established by the cultivated plants and the languages of its aborigines. *Anaes do XX Congresso Internacional de Americanistas, realizado no Rio de Janeiro, de 20 a 30 de Agosto de 1922* [International Congress of Americanists, 20th, Rio de Janeiro, 1922] 1:167-171. Rio de Janeiro, Imprensa nacional, 1924. (43)

The object of this paper is to point out the complete isolation of America from the rest of the world before the time of Columbus. The argument is based largely on the fact that no grain or food plant of the Old World had found its way to the Western Hemisphere in prehistoric times and vice versa.

Safford, William Edwin.

The isolation of ancient America as indicated by its agriculture and languages. *Scientific Monthly*, 22:55-59 (January, 1926). (44)

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Notre héritage des Indiens Américains. Annaes de XX Congresso Internacional de Americanistas, realizado no Rio de Janeiro, de 20 a 30 de Agosto de 1922 [International Congress of Americanists, 20th, Rio de Janeiro, 1922], 1:173-178, 17 illus. Rio de Janeiro, Imprensa Nacional, 1924. (45)

Translated and published as an article entitled "Our Heritage from the American Indians," in the Smithsonian Institution Annual Report, 1926:405-410, illus.

A study of important plants used as food, medicine, and dyes, and the textile and other economic plants discovered and introduced into cultivation by the American aborigines before the time of Columbus.

Sanford, Albert Hart.

The story of agriculture in the United States. Boston, New York, [etc.], D.C. Heath & co., [1916]. 394 p., illus. (46)

See ch. 1, The Indians as farmers, p. 1-11.

Speck, Frank G.

Land ownership among hunting peoples in primitive America and the world's marginal areas. Atti del 22 Congresso Internazionale degli Americanisti, Roma. Settembre, 1926 [International Congress of Americanists, 22d, Rome, 1926], 2:323-332. (47)

Spinden, Herbert Joseph.

La agricultura en la América precolombiana. *La Hacienda*, 23:202-204, 5 illus. (June, 1928). (48)

Subtitle: De Cómo los Indígenas del Continente Americano Cultivaban y Explotaban Numerosas Plantas Agrícolas, Forestales y Medicinales- Patatas, Maíz, Cacao, Habichuelas, Cocahuetes, Caucho, etc.- ya Muchos Siglos Antes de la Llegada de los Españoles.

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The invention and spread of agriculture in America. *American Museum Journal*, 17 (3):181-188 (March, 1917). (49)

The substance of this study of agriculture among the Indians was presented at the Second Pan-American Congress, Washington, D. C., December, 1916.

The illustrations are views of the following: pottery reproductions of maize, cast in molds that were made over actual ears of maize, - these reproductions were sometimes used as details on great ceremonial urns in southern Mexico; pottery reproductions of squashes; the "maize god" of the Peruvians whose body is formed of molded ears of maize, buried in the field as a prayer for good crops; a water jar decorated with peanuts found in the cemetery of Chimbote on the arid coast of Peru. The map shows the pottery distribution and agriculture in the New World.

This article is reprinted, including the illustrations, with the title "Origin of American Agriculture; Ancient Pottery Reveals the Invention and Spread of Agriculture in America," in the Scientific American Supplement, 88:120-121, 127 (Aug. 23, 1919).

Spinden, Herbert Joseph.

The origin and distribution of agriculture in America. International Congress of Americanists, 19th, Washington, 1915, Proceedings, p. 269-276. Washington, 1917.

(50)

Reprinted on p. 245-251 of Source Book in Anthropology, edited by Alfred Louis Kroeber and Thomas Talbot Waterman and issued as California University Syllabus Series, no. 118 (Berkeley, University of California Press, 1920).

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The population of ancient America. Geographical Review, 18:641-660 (October, 1928).

(51)

A separate map, plate 7, faces p. 660.

Reprinted in Smithsonian Institution Annual Report, 1929:451-471.

Though pertaining primarily to Central America, the factors which have led to the decrease of the Indians there are applicable to the race as a whole, and the author's estimates of population refer to both continents. The chronological and economic diagram of the parallelism between Old and New World civilization presenting in summary form some of the facts bearing on the question of the population of ancient America is of particular interest. There are a few paragraphs on Indian agriculture, including the statement that about four-sevenths of the agricultural production of the United States (farm values) are in economic plants domesticated by the American Indian and taken over by the white man.

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Thank the American Indian; we owe to the Indian well over half of our great agricultural wealth; potatoes, maize, cacao, beans, the peanut, rubber and other plants were domesticated here long before Columbus discovered America. Scientific American, 138:330-332 (April, 1928).

(52)

As the title indicates, this article is a brief study of the origin and domestication of the plants which constitute our inheritance from the ancient civilization of American Indians. In the first paragraph the author states that four-sevenths of our total agricultural wealth "consists of crops unknown in the Old World until after the momentous voyage of Columbus." This is an excellent article.



The illustrations include pictures which show the following: a stone on which is a carving of the monkey god of cacao, cacao pods being attached to his limbs and tail; the goddess of water holding ears of maize in her hands; a sixth century sculpture from Copan of the god of maize, his head being an opening ear of maize; the god of maize of Peru, a bundle of actual ears supplying the mold for this tusked god whose children are also shown.

Thomas, Cyrus.

The Indians of North America in historic times... in conference with M.J.McGee... Philadelphia, George Barrie & sons, 1903. 464 p.  
(History of North America, edited by Guy Carleton Lee, v. 2). (53)

See especially ch. 20, The Indians as a race and as a factor in American history.

Contents: Editor's introduction, p. v-viii; Author's preface, p. ix-xi; 1, Aborigines of the West Indies and Central America, p. 3-27; 2, Tribes of Mexico, p. 29-51; 3, The Indians of Florida and the Eastern Gulf States, p. 53-68; 4, The Indians of the Southern Atlantic colonies, 1, Virginia and Maryland, p. 69-90; 5, The Indians of the Southern Atlantic colonies, 2, The Carolinas and Georgia, p. 91-107; 6, The Indians of New Jersey and Pennsylvania, p. 109-130; 7, The Indians of New York, p. 131-154; 8, The Indians of New England, p. 155-179; 9, The Indians of New England (continued), p. 181-209; 10, The Indians of the St. Lawrence, p. 211-236; 11, The Indian history of the Ohio Valley; or, The border wars, p. 237-260; 12, The Shawnees and the Miamis, p. 261-282; 13, The Indians of the Old Northwest, p. 283-304; 14, The Indians of Alabama, Mississippi, and western Georgia, p. 305-324; 15, The Sioux and tribes of the Plains, p. 325-345; 16, Tribes of the far northwest, p. 347-362; 17, The Shoshones and other Rocky Mountain tribes, p. 363-379; 18, The Indians of the Northwest coast, p. 381-398; 19, The Indian policy of the United States, p. 399-413; 20, The Indians as a race and as a factor in American history, p. 414-432; Appendix 1, List of linguistic families and tribal languages of Mexico and Central America, p. 433-440; Appendix 2, List of Indian stocks north of Mexico, p. 441-443; Appendix 3, List of Indian reservations in the United States in 1902, and the number of acres contained in each, p. 445-480.

Vavilov, N. I.

Mexico and Central America as the principal center of origin of cultivated plants of the New World. Bulletin of Applied Botany, of Genetics and Plant Breeding, 26:135-199. Leningrad, 1931. (54)

Review in, the Geographical Review, 21:680-682 (October, 1931).

Winchell, N. H., collator

The aborigines of Minnesota. St. Paul, Minn., Minnesota historical society, 1911. 761 p., illus., maps. (55)

A report based on the collections of Jacob V. Brower, and on the field surveys and notes of Alfred J. Hill and Theodore H. Lewis.

P. 1-559 pertain to the Dakota Indians; p. 580-731, to the Ojibwa. See especially p. 491-497 on the agriculture, ornaments and food of the Dakota (agricultural implements; vegetable foods not agricultural-rice, bulbous roots, mdo, Indian turnip, berries, maple sugar, tripe de roche); p. 518-559 on the history, treaties, missions, reservations, of the Dakota in Minnesota; p. 592-596 on the food of the Ojibwa (wild rice; waub-es-sec-pin; maple sugar; berries; tripe de roche or reindeer moss); and p. 616-636 on the Ojibwa treaties ceding lands in Minnesota.

Wissler, Clark.

Agriculture; primitive agriculture. Encyclopaedia of the Social Sciences, edited by Edwin R. A. Seligman, 1:572-574 (New York, 1930). (56)  
Bibliography, p. 598-599.

See also articles on Irrigation; Migration; Nomads; Culture; Anthropology.

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The American Indian; an introduction to the anthropology of the New World. 2d ed. New York [etc.], Oxford university press, 1922. 474 p., illus., maps. (57)

Bibliography, p. 421-449.

Tables of linguistic stocks, after J. W. Powell, p. 403-419.

Review by A. A. Goldenweiser in the American Historical Review, 23:859-860 (July, 1918); by Albert Ernest Jenks in the American Museum Journal, 18:646-661 (December, 1918). Wissler's methods are analyzed by A. L. Kroeber in a chapter entitled "The Culture-Area and Age-Area Concepts of Clark Wissler," in Methods in Social Science, edited by Stuart A. Rice, p. 248-265 (Chicago, University of Chicago Press, 1931).

A résumé of the book, including the maps of the food areas of the new world and the culture areas of the American Indians, is given in an article entitled "The Culture of the American Indian: Its Regional Distribution and Origin," in the Geographical Review, 10:262-266 (October, 1920).

Note especially ch. 1, The food areas of the New World, p. 1-27; and ch. 2, Domestication of animals and methods of transportation, p. 28-41.

Note also Figure 1, p. 2, Food areas of the New World; Figure 2, p. 4, Map of the American Arctic, showing the habitat of the musk-ox and the caribou and the migration routes of the eastern Eskimos; Figure 3, p. 20, The distribution of maize and manioc; Figure 6, p. 26, The distribution of coca and tobacco; Figure 7, p. 29, The distribution of animal transport; Figure 14, p. 51, General distribution of types of basketry; Figure 58, p. 219, Culture areas; Figure 59, p. 221, The Plains Indians culture area (The most typical tribes are underlined); Figure 65, p. 306, Linguistic stocks in the United States and Canada (after J. W. Powell).

The following chapter titles indicate the contents:- 1, The food areas of the New World, p. 1-27; 2, Domestication of animals and methods of transportation, p. 28-41; 3, The textile arts, p. 42-65; 4, The ceramic arts, p. 66-75; 5, Decorative designs, p. 76-101; 6, Architecture, p. 102-118; 7, Work in stone and metals, p. 119-131; 8, Special inventions, p. 132-139; 9, The fine arts, p. 140-155; 10, Social grouping, p. 156-174; 11, Social regulation, p. 175-190; 12, Ritualistic observances, p. 191-205; 13, Mythology, p. 206-216; 14, The classification of social groups according to their cultures, p. 217-260; 15, Archaeological classification, p. 261-286; 16, Chronology of cultures, p. 287-303; 17, Linguistic classification, p. 304-323; 18, Somatic classification, p. 324-358; 19, Correlation of classification, p. 359-374; 20, Theories of culture origin, p. 375-388; 21, New World origins, p. 389-400; Linguistic tables, p. 401-419.

See also Clark Wissler's *The Relation of Nature to Man in Aboriginal America* (New York, Oxford University Press, 1926. 248 p., illus., maps, diagrs.) Bibliography, p. 223-232. "The text in this volume closely follows the lectures given at the Wagner Free Institute of Science in Philadelphia during February, 1924." It is reviewed by T. F. McIlwraith in the *Canadian Historical Review*, 7:330-331 (December, 1926); by R. B. Dixon in the *American Anthropologist*, 29:326-334 (July, 1927). Contents:- Introduction; 1, Traits of material culture; 2, Segregated distributions; 3, Social traits; 4, Somatic traits; 5, The distribution form and its meaning.

See also the same author's paper entitled "Relation of Nature to Man as Illustrated by the North American Indians," in *Ecology*, 5:311-318 (October, 1924). This paper was presented by invitation at the Cincinnati meeting of the Ecological Society, December, 1923, as a part of the symposium on the relation of general ecology to human ecology.

Wissler, Clark, Constance Lindsay Skinner, and William Wood.

*Adventurers in the wilderness*. New Haven, Yale university press; [etc.], 1925. 369 p., illus., maps. (The Pageant of America, edited by R. H. Gabriel, v. 1).

(58)

P. 1-64 deal particularly with the American Indians; these pages have 127 pictures of the American Indians. Other parts of the book also contain material on the Indians.



## II

### Agriculture of Particular Regions and Tribes

#### Aztec Agriculture in Mexico

Butman, Carl Hawes.

Xochimilco and its lake of gardens; Aztec irrigation of the sixteenth century. *Scientific American Supplement*, 74:132-133 (Aug. 31, 1912). (59)

An account of the unique irrigation system which the Aztecs built and were using when Cortez invaded Mexico in 1521. Five illustrations.

Manchester, H. H.

Prehistoric American gardens. *Garden Magazine & Home Builder*, 42: 41-43 (September, 1925). (60)

Sub-headings: gardening in the two Americas before the advent of Columbus; the part flowers played in Incaland and early Mexico; amusing movable gardens and how bird conservation began four centuries ago. There are four illustrations.

Nuttall, Zelia.

The flower lovers and gardeners of ancient Mexico. *Journal of the International Garden Club*, 3:364-379 (September, 1919). (61)

The article has seven illustrations.

Also available in Spanish in a version entitled "Los Aficionados a las Flores y los Jardines del Mexico Antiguo," in *Memorias y Revista de la Sociedad Científica "Antonio Alzate" Mexico*, 43:593-608 (Septiembre-Diciembre, 1924). This version also has seven illustrations.

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The gardens of ancient Mexico. *Journal of the International Garden Club*, 3:573-590 (December, 1919). (62)

The article has three illustrations.

Reprinted in the *Smithsonian Institution Annual Report*, 1923:453-464, 5 illus.

Also available in Spanish in a version entitled "Los Jardines del Antiguo Mexico," in *Memorias y Revista de la Sociedad Científica "Antonio Alzate" Mexico*, 37:193-213 (Diciembre, 1920). Only the picture of the bath and throne of Nezahualcoyotl, king of Texcoco, accompanies this version.

Safford, William Edwin.

An economic amaranthus of ancient America (with exhibition of specimens and lantern). *Science*, 44:870 (Dec. 15, 1916). (63)

"Among the tributes paid to Montezuma by the pueblos of Mexico was a certain grain of ivory whiteness and more minute than a mustard seed, called by the Aztecs huauhtli. Eighteen imperial granaries were filled with it each year, each having a capacity of about 9,000 bushels."

Safford, William Edwin.

A forgotten cereal of ancient America. International Congress of Americanists, 19th, Washington, December 27-31, 1915, Proceedings, p. 286-297. Washington, 1917. (64)

The author identifies the white-seeded amaranthus with the ceremonial huauhtli of the Aztecs and with the "bledo" of Cabeza de Vaca.

Steffen, Max.

Die Landwirtschaft bei den Altamerikanischen Kulturvölkern. Leipzig, Duncker & Humblot, 1883. 139 p. (65)

Contents:- Die Azteken.- Die Mayas.- Die Chibchas.- Das Incareich.

See also items 5, 12, 22, 24, 27, 31, 34, 36-37, 53, 57, 167, 207, 287-288, 296, 390, 442, 480, 493, 521.

### Cuba and Haiti

Reynoso, Alvaro.

Agricultura de los Indígenas de Cuba y Haiti. Paris, 1881. 111 p. (Notas Acerca del Cultivo en Camellones). (66)

Una nueva edicion, notablemente corregida y aumentada de Apuntes acerca de varios cultivos Cubanos. Hemos creído conveniente separar de esa próxima publicacion lo que se refiere al cultivo de los tubérculos por los indígenas de Cuba y Haití, porque en ella no podíamos exponer ciertas consideraciones; mientras que, en la presente forma, es posible manifestarlas oportunamente con un fin determinado.

### Inca Agriculture

Baudin, Louis.

Les communautés agraires du Pérou précolombien. Revue d'Histoire Economique et Sociale, Paris, 15 (3):302-320 (1927). (67)

Bibliography, p. 318-320.

"Cet article constituera un chapitre d'un ouvrage qui paraîtra prochainement sur: L'Empire des Inka." Its contents are indicated by the following headings: La politique agraire; le partage du sol; le partage du bétail; l'exportation du modes de culture; les traces de propriété individuelle.

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L'empire socialiste des Inka. Paris, Institut d'ethnologie, 1928. 296 p., maps. (Université de Paris. Travaux et mémoires de L'institut d'ethnologie, 5). (68)

Review by G. Grandidier in Journal des Débats, 35 (2):337-399 (Sept. 7, 1928).

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L'organisation économique de l'Empire des Incas (Pérou précolombien). Revue de l'Amérique Latine, 17 (89):385-393 (May, 1929). (69-70)

The economic organization of the Inca Empire, stressing the agrarian village-community, or ayllus, which was the basis of the economic and social structure of pre-Hispanic Peru. An extensive abstract by Philip A. Means is given in Social Science Abstracts, 1:8051 (November, 1929).

Also published in Séances et Travaux de l'Académie des Sciences Morales et Politiques (Paris), Comptes Rendus, 89:445-455 (November-December, 1929).

Bonthoux, Victor Adolphe.

Le régime économique des Incas. Paris, Amand Girard, 1927. 116 p. (71)

Butterfield, H. M.

The agriculture of ancient Peru. University of California Journal of Agriculture, 7 (4):31 (April, 1921). (72)

Constantin, J., and D. Bois.

Sur les graines et tubercules des tombeaux Péruviens de la période Incasique. Revue Générale de la Botanique, 22:242-265 (June 15, 1910). (73)  
Bibliographical footnotes and fifteen figures in the text.

Cook, Orator Fuller.

Foot-plow agriculture in Peru. Smithsonian Institution Annual Report, 1918:487-491, 1 illus. (74)

Also in the Bulletin of the Pan-American Union, 52:160-166 (February, 1921); four pictures accompany the article, two of the taclla, the ancient instrument used by the Aztecs for turning the earth on the terraced farms of the Peruvian and Bolivian mountains and two of the terraced slopes of the Andes.

The author briefly considers the highly specialized agriculture of the ancient Peruvians by three principal types or systems, namely the more primitive milpa system in the lower valleys at altitudes of less than 5,000 feet, the terrace system in the intermediate or temperate valleys of the eastern Andes at altitudes between 5,000 and 11,000 feet, and the system in the higher valleys at altitudes of from 11,000 to 14,000 feet where the farming was done by human labor, facilitated by a peculiar implement for breaking the sod. This implement and its use is described in detail.

The illustration shows the cashrom or foot-plow of the Hebrides, from Mitchell's The Past in the Present, p. 113. Its survival suggests that northern Europe may have passed through a stage corresponding to the foot-plow agriculture of Peru.

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Peru as a center of domestication; tracing the origin of civilization through the domesticated plants. Journal of Heredity, 16:33-46, 94-110 (February and March, 1925). (75)

List of names of domesticated plants in Peru, p. 99-100.

There are 21 illustrations.

Reprinted in slightly abridged form and with only 12 plates in the Smithsonian Institution Annual Report, 1925:509-532.



The subject is treated under the following sub-headings: plants domesticated before animals; agriculture indigenous in America; relative antiquity of domestication; unity of American agriculture; location of Maya civilization; endemic crop plants of the Peruvian region; native Peruvian plant names; crop plants of extra-Peruvian origin; other centers of domestication; conditions of domestication in Peru; domestication of animals in Peru; agricultural arts in Peru; building of terraces and irrigation works; weaving of cotton and wool; astronomical determination of seasons; social organization and colonization; summary.

The illustrations include views of the following: terrace agriculture of ancient Peru; pig-weeds as seed crops; a field of quinoa; cocaine shrub; a seed-bearing cassava; a cultivated lupine; oca (*Oxalis tuberosum*) roots; Peruvian potato varieties; roots of the Papa lisas; an edible canna; a nasturtium root crop; a striped variety of anyus; a sweet potato in flower; roots of the llacon; Inca storehouses.

Cook, Orator Fuller.

Peru as a primitive center of agriculture. *Journal of the Washington Academy of Sciences*, 19:127-128 (March, 1929). (76)

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Quichua names of sweet potato. *Journal of the Washington Academy of Sciences*, 6:86-90 (Feb. 19, 1916). (77)

In connection with this article, see John R. Swanton's "Notes on the Aboriginal name 'Aje,'" in the *Journal of the Washington Academy of Sciences*, 6:136-137 (March 19, 1916).

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Staircase farms of the ancients; astounding farming skill of ancient Peruvians, who were probably the most industrious and highly organized people in history. *National Geographic Magazine*, 29:474-534 (May, 1916). (78)

There are 48 illustrations; among those of particular interest are the following: an artificial waterfall connecting two ancient irrigation ditches in the high coastal desert of southwestern Peru; wheat and barley fields of the slopes above the Urubamba Valley; one of the highest agricultural canals in the world; two views of plowing in Peru; llamas loaded with rock salt in a typical Peruvian plaza; a boy shepherd and his sheep near Chincheros, Peru; several views of staircase farms of the ancients; storehouses for the crops of the Incas; ear of Cuzco, the large-kernel corn of Peru; cuzco kernels; pigmy corn of the highest altitudes; a pile containing sixteen potato varieties from one field; views of two other varieties of potatoes; coca-drying yard at Santa Ana; two views of coca plantations; a native Peruvian cotton; a tree tomato, a wild-cherry tomato; a wild tomato of the eastern Andes.

See also the photograph of foot-plowing in Peru, p. 452, and the photograph of a flock of young alpacas in Hiram Bingham's "Further Explorations in the Land of the Incas" in the same number.

Eaton, George F.

Food animals of the Peruvian highlands. Congrès International des Américanistes, Compte-rendu de la XXI<sup>e</sup> session Deuxième partie tenue à Göteborg en 1924, p. 61-66. Göteborg, Museum, 1925. (79)

The subject is treated under the following sub-headings: Introduction; Comparison of plant and animal foods; Garniture of graves and contents of kitchen middens as evidence of flesh diet; Groups of mammals represented (deer; dog; rodents; marsupials); Note on ceremonial cannibalism.

Enock, C. Reginald.

The land laws and "socialism" of the Incas of Peru. London, P. S. King & son, [1912?] 33 p. (National Liberal Club Political and Economic Circle, Transactions, part 83). (80)

An address delivered at the eighty-third dinner of the National Liberal Club Political and Economic Circle, October 28, 1912.

Discussion and reply, p. 20-33.

Guerrero, J. C.

Der staatssozialismus im alten Peru. Nord und Süd, 52:538-543 (June, 1929). (81)

State socialism in ancient Peru.

Hardy, Osgood.

The Incas. Mentor, 6 (3):1-11 (March 15, 1918). (82)

There are 27 illustrations. Note particularly the printed text on the abundant food supply of the Incas on the back of plate 4 and also the material on peasant and labor conditions, p. 8; and agriculture and architecture, p. 9-11.

Joyce, Thomas Athol.

South American archaeology; an introduction to the archaeology of the South American continent with special reference to the early history of Peru. New York, G. P. Putnam's sons, 1912. 292 p. (83)

Bibliography.

Review by William Curtis Farabee in the American Historical Review, 18:116-118 (October, 1912).

Kell, Walter V.

Indians discovered nitrate of soda in South America; now used for one hundred years by American farmers. Hoosier Farmer, 15 (4):12-13, 29 (Feb. 15, 1930). (84)

McBride, George McCutchen.

The agrarian Indian communities of Highland Bolivia. New York, Oxford university press, 1921. 27 p., 3 illus., 2 maps. (American geographic society. Research series 5). (85)

Bibliographical footnotes.

The subject is considered under the following sub-headings: Bolivia an agricultural country; Distribution of the population; Attachment to the soil; Organization of the communities; Common lands; Modifications introduced by the Spaniards; Modifications introduced by the Bolivian Republic; Distribution of surviving communities; Department of La Paz; Department of Oruro; Department of Potosí; Department of Chuquisaca; Department of Cochabamba; Number of Indians living in communities; Extent of community holdings; Present tendencies.

Means, Philip Ainsworth.

Ancient civilizations of the Andes. New York, Charles Scribner's sons, 1931. 586 p., illus., maps.

(86)

Bibliography, p. 545-573.

See p. 12, 20-21, 36-37 for material on agriculture; and p. 11, 19-22, 309-317, 323 for material on diet.

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The domestication of the llama. Science, 47:268-269 (March 15, 1918).

(87)

Commented on at length in an article by O. F. Cook entitled "Domestication of Animals in Peru," in Journal of Heredity, 10: 176-181 (April, 1919).

Olson, Ronald L.

Old empires of the Andes. Natural History, 31:3-22 (January-February, 1931).

(88)

The succession of civilizations in the Andes,-- Nazca, Early Chimu which led over to Tiahuanaco, Epigonal, Chavin (the last two probably derivatives of Tiahuanaco), Late Chimu (derived from Chavin), Ica and Inca (derived from Ica). The article is accompanied by 19 pictures, a map of the Inca Empire, and a chart of the sequence of cultures.

Summary by L. L. Bernard in Social Science Abstracts, 3:14976 (October, 1931).

Poindexter, Miles.

The Ayar-Incas. New York, Horace Liveright, 1930. 2 v., illus., maps.

(89)

1, Monuments, culture, and American relationships; 2, Asiatic origins.

Review by J. W. Gregory in the Geographical Journal, 78:555-557 (December, 1931).

"The first volume records...observations at many of the more famous ancient sites and summarizes many of the facts about the early Peruvian cultures, religion, architecture, implements, weaving, music, and agriculture;..."

See especially v. 1, ch. 10, Terraced Farms, p. 83-88; ch. 15, The Spread of Aboriginal American Culture, p. 122-127; ch. 18, Colonization, Trade and Communication, p. 141-148; ch. 35, Weaving, p. 240-245, affording information on cotton; ch. 38, Roads, p. 253-254; ch. 39, Agriculture and Stock-Breeding, p. 255-256.



Ugarte, César Antonio.

The economic life of Ancient Peru; notes for the economic history of Peru. Inter-America (English ed.), 8:126-138 (December, 1924). (90)

Translation of an article printed in Mercurio Peruano (Lima, Peru), May, 1924, on the results of investigations, conducted during recent years, concerning the economic life of ancient Peru. There are two illustrations.

A summary appears as an article entitled "Economic Life of Ancient Peru," in the American Review of Reviews, 70:547-549 (November, 1924). This version has two illustrations.

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The communism of the ancient Peruvians; archeological researches have changed traditional ideas upon the famous empire of the Incas. Pan-American Magazine, 32:307-316 (May, 1921). (91)

Note particularly the conclusions on p. 313-316.

Eleven of the seventeen pictures are of ruins of the Inca period.

Wrigley, G. M.

Fairs of the Central Andes. Geographical Review, 7:65-80 (February, 1919). (92)

Various kinds of fairs; transportation and the fair; the Huari fair; the Huancayo fair; the weekly fair (its ancient origin; twofold function of the market); the annual fair (seasonal and religious origin; festivals in ancient Peru; Christian ritual and pagan festival; other aspects of the fair; early connection with trade and transportation; location of the commercial fairs; fairs in transition zones; present conditions; relation to North American commerce). There are three illustrations and one map.

See also items 8, 10-12, 22, 27, 31, 34-37, 41, 57, 60, 65, 327, 335, 393-394, 438-439, 442, 458, 480, 512, 521.

### Iroquois Agriculture

Bates, Erl.

Our first New York co-operators. Bureau Farmer, 6 (2):3, 25 (October, 1930). (93)

Herriot, William.

Aboriginal agriculture in Southwestern Ontario. Waterloo Historical Society Annual Report (1923), 11:18-21. (94)

The article emphasizes the Jerusalem artichoke, the pumpkin, maize, tobacco, and aquatic plants and is based on De Candolle.

Stites, Sara Henry.

Economics of the Iroquois. Lancaster, Pa., New era printing co., 1905. 160 p. (95)

Bibliography, p. 157-159.

A dissertation presented to the Faculty of Bryn Mawr College for the degree of doctor of philosophy.

Review by Alexander F. Chamberlain in the Review of Historical Publications Relating to Canada (1905), 10:187-188.

Note particularly the introduction, Sketch of the economic systems of the North American Indians, and in Part 1, on Economic Antecedents of Iroquois Culture, ch. 1, The environment of the Iroquois, p. 13-19; ch. 2, The productive activities of the Iroquois, p. 20-26; ch. 3, The organization of producers, p. 27-43; ch. 4, The wealth of the Iroquois, p. 44-68.

Waugh, Frederick Wilkerson.

Iroquois foods and food preparation. Ottawa, Govt. printing bureau, 1916. 235 p., illus., xxxix pl. (Canada, Geological survey, Memoir 86. Anthropological series 12). (96)

Bibliography, p. 155-158.

Review in the Review of Historical Publications Relating to Canada (1916), 21:172-174.

Contents: Agricultural methods and customs, p. 3-46; Cookery and eating customs, p. 46-54; Utensils used in the gathering, preparation, and eating of food, p. 54-71; Food materials and recipes, p. 71-154.

See also items 137, 176, 468, 475.

#### Maya Agriculture

Cook, Orator Fuller.

The size of Maya farms. Journal of the Washington Academy of Sciences, 9:11-14 (Jan. 4, 1919). (97)

Gann, Thomas William Francis, and J. Eric Thompson.

The history of the Maya, from the earliest times to the present day. New York, Charles Scribner's sons, 1931. 264 p., illus. (98)

Bibliography, p. 255-257.

See especially p. 65, 120 ff., 138, 165, 188, 189, 233, 237.

Mason, J. Alden.

The Egypt of America. Natural History, 28:394-406 (July-August, 1928). (99)

"A short outline of the Maya, who developed the outstanding aboriginal American civilization, and left sculptured monuments that record their history since before the dawn of the Christian era." Fourteen pictures and one map.

Morley, Sylvanus Griswold.

Unearthing America's ancient history; investigation suggests that the Maya may have designed the first astronomical observatory in the New World in order to cultivate corn. National Geographic Magazine, 60:99-126 (July, 1931). (100)

The text on p. 99-106 pertains to agriculture, with special attention to corn. There are twenty-seven photographs and one diagram of Maya ruins.



Popenoe, Wilson.

The useful plants of Copan. American Anthropologist, 21:125-138 (April-June, 1919). (101)

A study of the plants for foodstuffs and other uses cultivated by the ancient Mayas in the valley of the Copan River in western Honduras. Following an introductory statement the subject is treated under the following headings: cereals and vegetables; fruits; beverage plants; plants used for seasoning and flavoring; fiber plants; plants used for coloring and dyeing; fence and hedge plants; miscellaneous useful plants.

See also items 57, 65, 75, 344, 480, 490, 493, 508.

### Missouri River Region

Gilmore, Melvin Randolph.

The Missouri River and the Indians. Bulletin of the Geographical Society of Philadelphia, 25:155-161 (October, 1927). (102)

A study of the influence of the Missouri as a channel along which coursed the flow of peoples and of aboriginal trade. The last four pages pertain to agriculture.

Grinnell, George Bird.

The Cheyenne Indians, their history and ways of life. New Haven, Yale university press; [etc.], 1923. 2 v., illus., map. (103)

For material on agriculture see v. 1, p. 251-254, and also scattered paragraphs on pages indicated in the index under agriculture.

For various early foods, see v. 1, p. 247-251; for useful plants, see v. 2, p. 166-191.

Prescott, Philander.

Farming among the Sioux Indians. United States Patent Office, Report on Agriculture, 1849:451-455. Washington, 1850. (104)

The author's report to the United States Commissioner of Patents as superintendent of farming for the Sioux.

Will, George Francis.

Indian agriculture at its northern limits in the Great Plains region of North America. Annaes do XX Congresso Internacional de Americanistas, realizado no Rio de Janeiro, de 20 a 30 de Agosto de 1922 [International Congress of Americanists, 20th, Rio de Janeiro, 1922], 1:203-205. Rio de Janeiro, Imprensa nacional, 1924. (105)

Wilson, Gilbert Livingstone.

Agriculture of the Hidatsa Indians; an Indian interpretation. Minneapolis, University of Minnesota press, 1917. 129 p., illus. (Minnesota University. Studies in the social sciences no. 9). (106)

This study of the economic life of the American Indian is based largely on data obtained from an old woman expert agriculturist of the Hidatsa tribe, born about 1839. It is not "an account merely of Indian agriculture. It is an Indian woman's interpretation of economics; the thoughts she gave to her fields; the philosophy of her labors." The material was collected by the author during the summers of 1912-1915, at Fort Berthold reservation.

The chapter titles are: 1, Tradition; 2, Beginning a garden; 3, Sunflowers; 4, Corn; 5, Squashes; 6, Beans; 7, Storing for winter; 8, The making of a drying stage; 9, Tools; 10, Fields at Like-a-fishhook Village; 11, Miscellaneous; 12, Since white men came; 13, Tobacco.

A review of this book with the title "Agriculture of the Hidatsa Indians; An Indian Interpretation," in the Journal of Home Economics, 11:168 (April, 1919), emphasizes the information which the study gives on characteristic Indian dishes prepared from agricultural products.

The book is also reviewed by Warren Upham in the Minnesota Historical Bulletin, 2:369-371 (February, 1918).

A valuable summary and review by Albert Ernest Jenks entitled "Agriculture of the Hidatsa Indians," appears in Science, 44:864-866 (Dec. 15, 1916).

See also items 136, 182, 184, 322, 380, 430, 443, 491.

#### New England

Jackson, Eric P.

Early uses of land in Rhode Island. Bulletin of the Geographical Society of Philadelphia, 24:69-87 (April, 1926). (107)

See the section on the early uses of land by the Indians, p. 69-74.

Willoughby, Charles C.

Houses and gardens of the New England Indians. American Anthropologist, 8:115-132 (January-March, 1906). (108)

Footnotes.

See also the author's chapter on the Wilderness and the Indian, in the Commonwealth History of Massachusetts, edited by Albert Bushnell Hart, 1:127-158 (New York, 1927).

See also items 8, 14, 17, 57, 152, 160, 442, 466.

#### Puerto Rico

Fewkes, Jesse Walter.

The aborigines of Porto Rico and neighboring islands. United States Bureau of American Ethnology Annual Report (1904) 25:3-320, illus. (109)

See especially Agriculture, p. 50-53.

Barnes, Will C.

The prehistoric corn belt. American Forestry, 33:604-607 (October, 1927). (110)

Interesting, especially for its photographs of the cliff dwellings of southwestern United States.

Burr, Walter.

Cliff-dwelling farming. Country Gentleman, 91 (1):7, 47 (January, 1926). (111)

The cliff-dwelling farmers of 7,000 years ago and their methods in southwestern Colorado in what is now Mesa Verde Park. Four illustrations.

Clark, S. P.

Are the original dry-farmers; Hopi Indians of Arizona have long record of successful effort. Agricultural Review, 13 (8):9 (October, 1921). (112)

Three illustrations accompany the article.

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Lessons from Southwestern Indian agriculture. Tucson, 1928. 229-252 p., 14 illus. (Arizona. Agricultural experiment station. Bulletin 125). (113)

The subject is treated under the following sub-headings: Introduction; The country and the climate of the Hopi; Effect of neighboring tribes on the life of the Hopi; Hopi agriculture and the selection of fields (Planting methods; protecting the crop; harvesting and storing the corn; Hopi cotton growing; beans an important Hopi crop; melons and squashes; Hopi irrigation; Hopi farming at Moenkopi; fruits in the Hopi country; Zuni Indian gardening; Zuni livestock); The Navajo Indians (Navajo livestock; weaving blankets); Prehistoric irrigation; The Papago Indians and their agriculture (harvesting and threshing the wheat; grinding the wheat into flour; storing grain; livestock of Papago Indians); Conclusions.

The illustrations show the following: Hopi Indian corn field; a Hopi Indian bean and corn field; corn piled in a house; a Zuni Indian garden; a flock of Navajo Indian sheep; a Navajo Indian homemade cultivator; a Papago Indian plow made from a single piece of mesquite wood; Papago Indians cooperating in harvesting wheat; a Papago Indian threshing floor; winnowing wheat; Papago Indian custom mill 75 miles southwest of Tucson; granaries made of woven grasses; Papago Indian cattle.

Douglass, Andrew Ellicott.

The secret of the southwest solved by talkative tree rings. National Geographic Magazine, 56:736-770 (December, 1929). (114)

There are 33 illustrations, including one map.

Eastwood, Alice.

Notes on the cliff dwellers. Zoe, 3:375-376 (January, 1893). (115)

A note on the uses made of some of the plants of the region as well as the plants which they cultivated that grow there no longer.



Estabrook, Mrs. Emma Franklin.

Givers of life; the American Indians as contributors to civilization. Foreword by Edgar L. Hewett. Albuquerque, New Mex., University of New Mexico press, 1931. 101 p., illus. (116)

References, p. 95-97; Bibliography, p. 99-101.

The Pueblo Indians are used as the medium of the author's survey, because their culture, which is in general typical, has come down to the present day with only slight modifications and so can be easily studied.

See especially the chapter on the American Indian as plant experimenter and agriculturist, p. 85-94.

Haas, William H.

The cliff-dweller and his habitat. Annals of the Association of American Geographers, 16:167-215 (December, 1926). (117)

See especially the following topics: The importance of food, p. 172-175; The importance of corn, p. 177-178; Location of agricultural lands, p. 195-198; The products of the region, p. 198; As an irrigation farmer, p. 210; Area of crop lands, p. 210-212; Food requirements, p. 214-215.

The map on p. 211 shows the prehistoric irrigation canals in the Salt River Valley in the vicinity of Phoenix and was prepared by Dr. Omar A. Turney.

Haerberlin, Herman Karl.

The idea of fertilization in the culture of the Pueblo Indians. Anthropological Association Memoirs (1916) 3:1-55. (118)

References, p. 52-55.

Submitted in partial fulfillment of the requirements for the degree of doctor of philosophy, in the faculty of philosophy, Columbia University.

Harshberger, John W.

Changes in the habits of the Hopi Indians, Arizona. Bulletin of the Geographical Society of Philadelphia, 24:39-45 (January, 1926). (119)

The last three pages have observations on the changes which are taking place in the agriculture of the Hopis.

Hodge, F. W.

Prehistoric irrigation in Arizona. American Anthropologist, 6:323-330 (July, 1893). (120)

From notes made in 1887-1888 while the author was a member of the Hemenway Archeological Expedition, operating in the Southwest under the directorship of Frank Hamilton Cushing.

Holder, Charles F.

Indian granaries. Scientific American, 29 (15):263 (Oct. 10, 1903). (121)

A consideration of the granaries of the Indians in the West, particularly in Arizona and New Mexico.

The illustrations show a Chemehuevi Indian reclining under a grass bower, watching his cornfield; a Chemehuevi granary; and a granary on top of a Yuma Indian's house.

Hough, Walter.

The cliff dweller housekeeper. American Indian Magazine, 7 (4):6-10 (August, 1920). (122)

"With wonderful realism the ... article raises the curtain of time upon the home life of a people who may have been extinct before Columbus discovered America."

The illustrations show the following: ears of cliff-dweller corn strung on a strip of yucca leaf and hung up for the winter store; a fire bowl; a sandal, made from leaves of a yucca plant; a miller's grinding stone and hand stone.

Judd, Neil M.

Everyday life in Pueblo Bonito, as disclosed by the National Geographic Society's archeological explorations in the Chaco Canyon National Monument, New Mexico. National Geographic Magazine, 48:227-262 (September, 1925). (123)

There are 38 illustrations, including one map.

Kidder, Alfred Vincent.

An introduction to the study of southwestern archeology, with a preliminary account of the excavations at Pecos. New Haven, published for the Department of archaeology, Phillips Academy, Andover, Mass., by the Yale university press, 1924. 151 p., illus., maps (Southwestern expedition papers, no. 1). (124)

Bibliography, p. 137-151.

Material on Indian agriculture is included.

See also his article entitled "American Farmers of 4000 B.C.; A Brief Survey of the Known History of Our Southwestern Aborigines," in the Scientific American, 137:22-24 (July, 1927), with six illustrations. There is a Spanish translation of this article under the title "La Agricultura en América 4000 años a. de J.C.," in La Hacienda, 22:231-233 (August, 1927), with the same illustrations.

MacClary, John Stewart.

The first American farmers. Art and Archaeology, 24:83-88 (September, 1927). (125)

A study of the prehistoric cliff-dwellers of the Southwest. The illustrations show a granary in which corn and beans were stored against lean years, dams thrown across drainage channels, forming terraces for water conservation, and a group of large earthenware jars used for holding the fruits of the harvest; the mouths of the jars were sealed by stone lids mudded in place.

The author also has an article with the same title in the World Review, 5:92-93, illus. (Oct. 24, 1927).

McGee, W. J.

The beginning of agriculture. American Anthropologist, 8:350-375 (October, 1895). (126)

"A few observations and generalizations made incidentally in the course of an expedition through the little-known region in Arizona and Sonora (Mexico) called by Spanish Americans 'Papageria,' or land of the Papago Indians... In part the observations recorded herein

pertain to subjects concerning which no expert knowledge is claimed; in so far as they relate to plants and animals they are merely such as any intelligent traveler through a region of pronounced peculiarities might be expected to make; but the observed relations of plants, animals, and men, among each other and to their common environment, were studied with care and generalized with some fullness...."

Mitchell, Guy E.

Most ancient of all grist-mills. American Forests and Forest Life, 30:745, 750 (December, 1924). (127)

The photograph accompanying the article shows an ancient Indian mill near the Yosemite National Park in California.

Russell, Frank.

The Pima Indians. United States Bureau of American Ethnology Annual Report (1904-05) 26:3-389, illus. (128)

The food supply, p. 66-83; in this section there are paragraphs on preparation of food, plants used for food, medicinal plants, and animals used for food. Domestication of animals, p. 84-86. Agriculture, p. 86-92; this section has paragraphs on irrigation, division of labor, cereals, and vegetables. Agricultural implements, p. 97-99. Household utensils, p. 99-102.

Sweet, Stuart L.

A conservation lesson from the cliff-dwellers. American Forests and Forest Life, 30:654-657, 690 (November, 1924). (129)

"The remarkable story of an ancient reclamation system recently discovered that is solving a modern problem in water conservation in the Mesa Verde National Park." Illustrations show a close-up of some of the irrigation dams recently uncovered; the great cliff palace of the Mesa Verde; and pictographs on the walls of one of the canyons of the Mesa Verde.

See also items 14, 186-189, 191, 338, 420, 422, 426, 428, 436, 442, 447, 455, 459, 469-470, 476, 480, 489, 509, 513.

## Virginia

Bruce, Philip Alexander.

Economic history of Virginia in the seventeenth century; an inquiry into the material condition of the people; based upon original and contemporaneous records. New York and London, Macmillan & co., 1896. 2v. (130)

Bibliography, v. 1, p. xv-xix.

See v. 1, ch. 2, Aboriginal Virginia: its physical character, p. 71-139, and particularly ch. 3, Aboriginal Virginia: Indian economy, p. 140-188. P. 149-165 of ch. 3 are reprinted in L. E. Schmidt and E. D. Ross, Readings in the Economic History of American Agriculture (New York, 1925), p. 40-49.

Maxwell, Hu.

The use and abuse of forests by the Virginia Indians. William and Mary College Quarterly Historical Magazine, 19:73-104 (October, 1910). (131)

Bibliographical footnotes.

Note especially p. 79-86 on land cleared for agriculture.



Willoughby, Charles C.

The Virginia Indians in the seventeenth century. American Anthropologist, 9:57-86 (January-March, 1907). (132)  
Footnotes and six illustrations. P. 82-86 on agriculture and food in general.

See also items 8, 14, 17, 22, 57, 454.

#### Wisconsin

Hibbard, Benjamin Horace.

Indian agriculture in southern Wisconsin. Wisconsin State Historical Society Proceedings, 1904:145-155. (133)  
Footnotes.  
Also in Magazine of History, 1:97-104 (February, 1905).

Packer, B. G.

Aboriginal and pioneer agriculture in Wisconsin. Wisconsin Magazine, 1:3-5, 4 illus. (July, 1923). (134)

See also items 177, 213, 259, 284-286.

### III

#### Specific Crops

##### Corn

Albes, Edward.

Maize; the greatest of American food products. Bulletin of the Pan American Union, 43:33-54 (July, 1916). (135)

Note p. 33-42 for material dealing particularly with the corn of the American Indians. There are 16 illustrations.

Atkinson, Alfred, and M. L. Wilson.

Corn in Montana; history, characteristics, adaptation. Bozeman, Montana, 1915. 128 p., illus. (Montana Agricultural experiment station. Bulletin 107). (136)

Bibliographical footnotes.

See especially p. 24-25 which deal with corn growing among the Indians. The subject is considered under the following sub-headings: origin of corn; corn growing of the Northeastern Indians; corn growing of the North Central Indians; corn growing of the Upper Missouri Indians (The Arikara; The Mandan; The Hidatsa); history of early Montana corn growing.

Part 3, on Classification and Variety History, also has pertinent facts.

Bates, Erl.

Iroquois gold or maize. Cornell Countryman, 20:7-9 (October, 1922). (137)

Concerning maize, especially as related to the Iroquois.

There are three illustrations: the picture of the Indian corn house shows a mortar, two baskets of sieves and corn carrying basket, "the grandfather of our pack basket."

Bates, E. A.

What the corn plant taught the Indian. Cornell Countryman, 27:42-43 (November, 1929). (138)

A slight article.

Beede, Aaron McGaffey.

Large Indian cornfields in North Dakota long ago. And an Indian drama petite for school children. [Bismarck, N.Dak., Tribune print. 1914] 24 p., illus. (139)

Biggar, Harvey Howard.

The old and the new in corn culture. United States Department of Agriculture Yearbook, 1918:123-136, 10 illus. (140)

Also issued as Yearbook Separate 776.

Also in Dakota Farmer, 39:1596-1599 (Oct. 15, 1919).

Also in abbreviated form in Hoard's Dairyman, 58:380-381, 384-385 (Sept. 26, 1919).

The following are among the topics treated: corn and the Indian; kinds of corn grown by the Indians; primitive seed-testing methods; primitive corn-planting methods; Indian cornfields; primitive tools; plants as indicators of the season; seed selection and storing; Indian corn foods; primitive and modern methods of culture.

The illustrations show the following: types of corn raised by the Indians of the southwest; an Indian's corn-husking pin made of bear bone; a scraper made from a deer's jaw and used by the Iroquois Indians for removing green corn from the cob, etc.

Biggar, Harvey Howard.

Primitive methods of maize seed preparation. Journal of the American Society of Agronomy, 10:183-185 (April, 1918). (141)

A contribution from the Office of Corn Investigations, Bureau of Plant Industry, United States Department of Agriculture, Washington, D.C.

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Trailing king corn; old tribesmen tell true story of Indian maize. Wallaces' Farmer and Iowa homestead, 55 (40):7, 19 (Oct. 4, 1930). (142)  
There are two illustrations.

Brewer, William H.

History of Indian corn; natural history of Indian corn. United States Bureau of the Census, 10th Census, 1880, v. 3, Report on Cereal Production of the United States, p. 93-96. (143)

Cassidy, Louise Lowber.

America's aboriginal corn belt; Pueblo Indians were corn growers five thousand years ago. Wallaces' Farmer, 51:1471, 1481 (Nov. 12, 1926). (144)

The illustrations are pictures showing an ancient wooden harrow found in a New Mexico village and a pile of many-colored ears of Indian corn drying in a Pueblo dooryard.

Collins, Guy N.

A fossil ear of maize; first tangible evidence of the existence of Indian corn in geologic times. Journal of Heredity, 10:170-172 (April, 1919). (145)

The illustration shows fossil maize compared with modern maize.

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Notes on the agricultural history of maize. American Historical Association Annual Report (1919) 1:409-429. (146)

Also in Agricultural History Society Papers, 2:409-429.

Read at the annual meeting of the Agricultural History Society, May 12, 1919. It contains much material on corn among the Indians.

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The origin of maize. Journal of the Washington Academy of Sciences, 2:520-530 (Dec. 19, 1912). (147)



A supplementary statement by the same writer entitled "Maize: Its Origin and Relationships," in the same publication, 8:42-43 (Jan. 19, 1918).

Collins, Guy N.

Pueblo Indian maize breeding; varieties specially adapted to arid regions developed by Hopis and Navajos; their work not sufficiently appreciated; probably much yet to be learned from them. *Journal of Heredity*, 5:255-268 (June, 1914).

(148)

The illustrations include a view of a Zuni plantation of maize in Arizona; one of a field at the base of the first Hopi mesa, near Polacco, Arizona; a close-up of a stalk of maize, the single ear being more than one-half the height of the entire plant; and a single plant of Navajo maize with the leaves and husks removed grown under irrigation at Shiprock, New Mexico.

Currelly, C. T.

Indian corn now feeds the nations. *Farmer's Advocate*, 64:1819, 1826 (Dec. 12, 1929).

(149)

The sub-title reads: "The American Indian was not so much a warrior and hunter as a farmer who has made an outstanding contribution to the agricultural progress of the world."

The illustrations include views of Indian corn from the southwestern United States about 1,000 years old, now in the Royal Ontario Museum, and a pottery figure of a Mexican god, with ears of corn represented in his head-dress, about 1,000 years old, and now in the Royal Ontario Museum.

Cushing, Frank Hamilton.

Zuñi breadstuff. New York, Museum of the American Indian, Heye Foundation, 1920. 673 p., illus. (Indian notes and monographs, v. 9). (150)

Review by A. L. Kroeber in *American Anthropologist*, 23:479 (October-December, 1921).

The contents of this book were first published as a series of articles in the *Millstone of Indianapolis*, a trade magazine that long since ceased publication, in its issues extending from volume 9, January, 1884, to volume 10, August, 1885. Later an attempt was made to reprint the articles in condensed form in *Milling of Chicago*, but only the first nine chapters thus appeared, extending from volume 3, no. 2, July 1893, to volume 4, no. 4, March, 1894, when their publication ceased.

The following are the chapter titles: 1, Creation, and the origin of corn; 2, The origin of the dragonfly and of the corn priests, or guardians of the seed; 3, Land-law and labor; 4, Corn-raising, or the "Decay of the Seed"; 5, Corn-raising, or the regeneration of the seed; 6, J'-no-te-kwea-wen-J'-tâ-we, or the "Food of the Ancients"; 7, Na'-pa-kwea-wen-J'-tâ-we, or the "Food of the Grandfathers"; 8, "The Young Men Who Were Fond of Parched Corn and Sweet Gruel, or the Four Awkward Suitors"; 9, Ta-a J-ta-we, or the "Food of the Seed of Seeds";

10, He-we J-ta-we, or the Wafer foods; 11, Khia J-ta-we, or Wheat food; 12, Hu-mu-a K'ia-na-kwe, or the Crooner bands; 13, The story of the younger hunter; 14, How he learned to hunt; 15, How he was divorced; 16, How he twice returned; 17, About some Indian meals; 18, More Indian meals; 19, Corn dances and festivals.

De Kruif, Paul Henry.

Hunger fighters. New York, Harcourt, Brace and co., 1928. 377 p., illus. (151)

See especially the Maize Finders; Ancient and Anonymous, p. 169-175, for an account of the domestication of maize by the Indians.

Delabarro, Edmund Burke, and Harris H. Wilder.

Indian corn hills in Massachusetts. American Anthropologist, 22:203-225 (July-September, 1920). (152)

Footnotes.

A study of the remains of small mounds or hills in which the Indians planted their maize and other crops. There are illustrations, including a map.

A "footnote" concerning similar remnants of Indian agriculture in the vicinity of Mohegan, Connecticut, by A. I. Hallowell, entitled "Indian Corn Hills," in the American Anthropologist, 23:233 (April-June, 1921), supplements this item.

Diguet, Léon.

Le maïs et le maguey chez les anciennes population du Mexique. Journal de la Société des Américanistes de Paris (1910) 7:5-35, illus. (153)  
Conclusions and bibliography, p. 34-35.

East, Edward M.

A chronicle of the tribe of corn. Popular Science Monthly, 82:225-236 (March, 1913). (154)

An endeavor to trace the exact path of the evolution of maize. The author agrees with many of the conclusions of Montgomery and Collins and attempts to present in this paper only the probable way in which certain important jumps were made. Twelve illustrations.

Fletcher, Alice C., and Francis La Flesche.

The Omaha tribe. United States Bureau of American Ethnology Annual Report (1906) 27:17-672, illus. (155)

See especially the section on The Quest for Food, p. 261-312. It contains material on the ritual of the maize, cultivation of maize, names of parts and preparations of maize. See p. 340-342 on Cooking and Foods; also Some Curative Plants, p. 584-587.

Furnas, Robert W.

Corn; its origin, history, uses, and abuses. Lincoln, Nebraska, 1886. 26 p. (156)

See especially p. 9-13 on the origin of corn.

Gilmore, Melvin Randolph.

Arikara commerce. Indian Notes, 3:13-18 (January, 1926). (157)

One illustration shows an Indian woman roasting corn for drying for winter use; another, braided strings of seed corn curing on a scaffold.

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Greater breeders than Reid or Leaming. Wallaces' Farmer, 54:726, 734 (May 10, 1929). (158)

The sub-title reads: American Indian holds the record in developing the Mid-West's greatest crop.

[Gregory, Clifford V.]

Farming through the ages; the story of Indian corn. Prairie Farmer, 101:119, 139 (Jan. 26, 1929). (159)

This is the fifteenth installment of the series entitled "Farming Through the Ages."

The four pictures are of the following: a drawing of corn, or "Turkie Wheat," made in 1597; a Zapotecan urn with ears of corn on its sides; a wooden Indian hoe; corn found in Indian ruins of the basket-maker era in Arizona.

Hallowell, A. I.

Indian corn hills. American Anthropologist, 23:233 (April-June, 1921). (160)

Concerned with remnants of Indian agriculture found in the vicinity of Mohegan, Connecticut and offered as a "footnote" to the article by Delabarre and Wilder. See item 152.

Harrington, M. R.

Some Seneca corn foods and their preparation. American Anthropologist, 10:575-590 (October-December, 1908). (161)

"The principal native methods of corn preparation still in use among the Seneca Indians, as told me by the people themselves during my various sojourns among them on their reservations in western New York, without any attention to treat the subject from the historical standpoint or to make a compilation from various authors." Eleven illustrations.

Harshberger, John W.

Maize: a botanical and economic study. Pennsylvania University Publications Contributions from the Botanical Laboratory, 1 (2): 75-202, 4 plates. Philadelphia, 1893. (162)

Footnotes and bibliography at the end of certain of the chapters.

The following are the chapter titles: 1, Botanical, p. 75-89; 2, Origin, p. 90-153; 3, Geographical distribution, p. 154-158; 4, Chemical, p. 159-170; 5, Agriculture-physiological, p. 171-176; 6, Utility, p. 177-188; 7, Economic considerations, p. 189-198; 8, Future, p. 199-200.

See also the same author's article entitled "Maize, or Indian Corn," in the Cyclopedia of American Agriculture, 2:398-402.



Hendry, George W.

Archaeological evidence concerning the origin of sweet maize.

Journal of the American Society of Agronomy, 22:508-514 (June, 1930). (163)

Literature cited, p. 513-514.

The author concludes that sweet maize was derived through mutation from an older endosperm type or types, and that such mutation occurred in at least one instance in the Peruvian highlands prior to 1534 A. D., that in this instance it seems probable that the sweet mutant first appeared in a variety of the floury type; and that a distinct group of sweet varieties, possessing characteristics similar to the Huanrachuco variety and possibly of similar genesis, is to be found under cultivation among the Indians of the arid Southwest, and probably in Peru.

Photograph of the Huanrachuco ear with sections of representative kernels, p. 509.

Hen-toh, Wyandot.

Mon-dah-min, and the red man's world old uses of Indian corn as food.

Journal of Home Economics, 10:444-451 (October, 1918). (164)

Hinsdale, Wilbert B.

Indian corn culture in Michigan. Michigan Academy of Science, Arts and Letters, Papers (1927) 8:31-49, illus. (165)

Footnotes.

The illustration is of an old Indian corn-field still to be seen in Haynes Township, Alcona County, Michigan.

Kellerman, Mrs. W. A.

The primitive corn. Meehans' Monthly, 5:44 (January, 1895). (166)

"Speculation on the origin of Indian corn."

Kempton, J. H.

Maize and man. Journal of Heredity, 17:32-51 (February, 1926). (167)

Concerning the origin of maize.

There are 18 illustrations, including reproductions of photographs of the following: prehistoric vases decorated with maize or corn, its use as a decorative motif emphasizing the plant's importance to the ancient aborigines; a terra cotta Aztec ceremonial urn showing the season's history of the maize plant from the planting to the harvest; a clay whistle made by the Maya Indians; prehistoric ears of maize; a plant of Tripsacum pilosum, a North American cousin of maize; plants of Gama grass (Tripsacum lanceolatum), a remote ancestor of maize; plants of the annual teosinte (Euchlaena mexicana), relative of maize; Jala maize which has the largest plants of any known variety; Cuzco maize which has the largest kernels.

Lacy, Mary G.

Corn, our oldest inhabitant. Wallaces' Farmer, 44:2517 (Dec. 19, 1919). (168)

Lawrence, D. H.

The dance of the sprouting corn. Theatre Arts Magazine, 8:447-457 (July, 1924). (169)

The Corn Dance of one of the Rio Grande Pueblos. There are four illustrations.

Linton, Ralph.

The significance of certain traits in North American maize culture. American Anthropologist, 26:345-349 (July-September, 1924). (170)

The maize culture of eastern United States differed in several particulars from those of the Southwest and Mexico, and the author aims to show that the traits peculiar to it were either developed independently after the acquisition of maize, or were derived from some older food complex which did not center around maize.

McNair, James B.

Indian corn. Chicago, Field Museum of Natural History, 1930. 33 p., illus. ([Chicago] Field Museum of natural history. Botanical leaflet 14). (171)

See especially Origin, Geographic Distribution and Varieties, p. 2-13; and Use by the American Indian, p. 14-18. The third section is on Modern Industrial and Experimental Products, p. 19-33. Note the photograph of the ancient Peruvian jar, p. 4, and that of a preconquest Mexican maize almanac, p. 16-17.

Mead, Charles W.

Indian corn or maize. Natural History; Journal of the American Museum of Natural History, 21:408-413 (July, 1921). (172)

Description of how corn was planted, ground, and prepared by the Indians.

There are four illustrations; they show an Iroquois woman pounding maize into meal; a metate and hand stone; a grinding device used in Peru and Bolivia; and an ear of corn from a pre-Columbian grave in Peru.

Messedaglia, Luigi.

Il mais e la vita rurale italiana, saggio di storia agraria. Piacenza, Federazione italiana dei consorzi agrari, 1927. 446 p., illus., map. (173)

Bibliographical note at the end of each chapter.

Note especially the following chapters: 2, Generalità sul mais; il mais nell'antica America; 3, Cristoforo Colombo e il mais; 4, I nomi del mais; 5, Il grano turco; perchè turco?

Millspaugh, Charles F.

Indian corn. Chautauquan, 31:338-343, 5 illus. (July, 1900). (174)

Nuttall, Zelia.

Documentary evidence concerning wild maize in Mexico. *Journal of Heredity*, 21:217-220 (May, 1930).

(175)

Bibliographical footnotes.

See also the same writer's "Wilder Mais in Mexiko," in *Zeitschrift für Ethnologie* (1927) 59 (3-6):252-254. In this article, attention is called to the statement made on page 21 of the Chevalier Boturini's *Idea de una Nueva Historia General de la America Septentrional* to the effect that he found wild maize growing in forests on the tierra caliente of Mexico and urges the reliability of this report of the comparatively late survival in the wild state of an ancestor of cultivated maize.

Parker, Arthur Caswell.

Iroquois uses of maize and other food plants. Albany, University of the State of New York, 1910. 119 p., illus. (New York State Museum. Bulletin 144).

(176)

List of authorities quoted, p. 110-113.

A valuable and scientific ethno-botanical study. Part 1, p. 9-88, pertains to maize. Its chapter titles are as follows: 1, Maize or Indian corn in history; 2, Early records of corn cultivation; 3, Customs of corn cultivation; 4, Ceremonial and legendary allusions to corn; 5, Varieties of maize used; 6, Corn cultivation terminology; 7, Utensils for the preparation of corn for food; 8, Cooking and eating customs; 9, Foods prepared from corn; 10, Uses of the corn plant.

Part 2 is devoted to other food plants. Its chapter titles are: 11, Beans and bean foods; 12, Squashes and other vine vegetables; 13, Leaf and stalk foods; 14, Fungi and lichens; 15, Fruit and berrylike foods; 16, Food nuts; 17, Sap and bark foods; 18, Food roots.

The illustrations are excellent and include views of the following: hoe blades; husking pins; corn mortars; baskets of various kinds; roasting frame; storage barrels, pits and cribs; corn picking and husking; ceremonials; masks of shreds of braided husk; husk moccasins.

Stickney, Gardner P.

The use of maize by Wisconsin Indians. [Milwaukee, Wis.] Printed for the Parkman Club by E. Keogh [1897] 63-87 p. (Parkman Club publications, no. 13).

(177)

Bibliographical footnotes.

Sturtevant, E. Lewis.

Indian corn and the Indian. *American Naturalist*, 19:225-234 (March, 1885).

(178)

Incidentally, material on agricultural products other than corn is included.

Unsigned.

Indians as corn growers. *Wallaces' Farmer*, 44:1624-1625 (Aug. 22, 1919),

(179)

A brief sketch in the Boys' Corner section.



Weatherwax, Paul.

The evolution of maize. Bulletin of the Torrey Botanical Club, 45:309-342 (August, 1918). (180)

References, p. 340-342.

Review by J. H. Kempton in the Journal of the Washington Academy of Sciences, 9:3-11 (Jan. 4, 1919).

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The story of the maize plant. Chicago, University of Chicago press, 1923. 247 p., illus., maps. (181)

Bibliography, p. 226-235.

See ch. 1, Introduction, p. 1-3; ch. 2, Names and relationships, p. 4-10; ch. 3, History and geographical distribution, p. 11-21; ch. 26, Maize in aboriginal America, p. 197-216; and ch. 27, Maize in American life, p. 217-225.

In ch. 26, Maize in Aboriginal America, the following topics are considered: food supply and civilization; maize areas in America; origin of maize culture; evolution of maize culture; varieties grown by the Indians; agricultural engineering; harvesting and storage; uses; maize and religion; America's gift to mankind.

Wenz, Alfred.

In the heart of the corn country. Dakota Farmer, 36:1068-1070 (Oct. 15, 1916). (182)

The corn growing of the Mandan Indians in the valley of the upper Missouri River. Ten illustrations.

Will, George Francis.

Corn for the northwest. St. Paul, Minn., Webb book publishing co., 1930. 158 p., illus. (183)

References, p. 154-156.

See especially ch. 3, Brief history of corn growing, p. 18-22; and ch. 5, History of aboriginal corn growing in the Northwest, p. 29-34. Photographs of aboriginal agricultural tools and products, p. 18; Arikara Indians preparing corn for drying, p. 20; Indian woman roasting corn beside her cornfield, p. 21; typical Mandan and Arikara corn ears, p. 30; Ft. Berthold village, about 1870, showing the earth lodges and corn scaffolds, p. 33.

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\_\_\_\_\_, and George E. Hyde.

Corn among the Indians of the upper Missouri. St. Louis, Mo., William Harvey Miner co., 1917. 323 p., illus. (Little Histories of North American Indians, No. 5). (184)

The following are the contents: Acknowledgements; Introduction; ch. 1, The upper Missouri Indians (1, Migrations and early history; 2, The Earth-Lodge Village; 3, Agriculture); ch. 2, Planting and cultivation (1, Spring work; Clearing and planting the ground; 2, Hoeing and weeding; 3, The patches, acreage, and yields); ch. 3, Harvest (1, The return from the summer hunt; 2, The green-corn harvest; 3, The

ripe-corn harvest; 4, Storing the crop; 5, Yields); ch. 4, Corn as food (1, Methods of preparing corn; 2, Utensils); ch. 5, Corn as an article of trade (1, Early inter-tribal trade; 2, Trade with the whites); ch. 6, The sacred character of corn (1, The corn and the buffalo; 2, Corn origin myths); ch. 7, Corn ceremonies (1, Ceremonial organization; 2, Sacred corn; 3, Spring, summer, and fall ceremonies; 4, Various ceremonies, beliefs, and practices); ch. 8, Varieties.

The illustrations show the following: set of Hidatsa agricultural implements; ears of various varieties of corn raised by the Indians; plants of various varieties of corn raised by the Indians; Mandan squash; rawhide bowl and stone mortar; bone hoe; baskets of the Mandans, Hidatsas, and Arikaras; Arikara woman threshing corn on the roof of her house.

An appreciation of this book is given by Clark Wissler under the title Indian Corn as a World Food, in the American Museum Journal, 18:25-29 (January, 1918). The seven illustrations accompanying this article are selected from the book reviewed.

Wissler, Clark.

Aboriginal maize culture as a typical culture-complex. American Journal of Sociology, 21:656-660 (March, 1916). (185)

Reprinted in L. E. Schmidt and E. D. Ross, Readings in the Economic History of American Agriculture (New York, 1925), p. 49-52, under the heading, Some Permanent Influences of Aboriginal Cultivation. Also reprinted in condensed form in the Literary Digest, 52:1277 (May 6, 1916).

See also items 1-3, 5-8, 10-11, 14-18, 22-23, 28, 37, 41-46, 49-50, 52, 54-57, 78, 93, 95, 107, 113, 117, 125, 130, 241, 271, 282, 316, 424, 428-429, 431, 436-437, 441, 444-445, 447, 462-463, 466, 468, 472, 475, 480, 485, 496-498, 502, 515.

#### Cotton

Bailey, Vernon.

The wild cotton plant (Thurberia thespesioides) in Arizona. Bulletin of the Torrey Botanical Club, 41:301-306 (May, 1914). (186)

A description of the wild cotton plant, Thurberia thespesioides, found in Arizona, giving its zonal range and a list of other plants generally associated with it.

Crawford, Morris De Camp.

The heritage of cotton; the fabric of two worlds and many ages. New York and London, G. P. Putnam's sons, 1931. 244 p., illus. (187)

Bibliography, p. 233-237.

First published in 1924.

See especially ch. 4, The New World, p. 30-45; and ch. 5, Peru, p. 46-61.

Kearney, Thomas H.

Cotton plants, tame and wild. Journal of Heredity, 21:195-210 (May, 1930). (188)

Literature cited, p. 210.

Introduction; domesticated in prehistoric times; the beginnings of

European contact with cotton; what cotton plants are like; development and structure of the seed hairs; biological significance of the seed hairs; geographical distribution of *Gossypium*; classification of the cultivated forms; wild species of *Gossypium*; origin of the modern commercial cottons.

Lewton, Frederick Lewis.

The cotton of the Hopi Indians: a new species of *Gossypium*. Washington, Smithsonian Institution, 1912. 10 p., 5 pl. (Smithsonian miscellaneous collections, v. 60, no. 6. Publication 2146). (189)

The antiquity of cotton culture in the Southwest, references to cotton by the first Spanish explorers, evidence of former cultivation by the Hopi Indians and the Pima Indians, and the modern uses and cultivation of cotton by the Hopis.

Commented on in an article entitled "An Early Type of Cotton Raised in the United States by the Hopi Indians," in *Scientific American*, 107:442 (Nov. 23, 1912).

The plates are of the Hopi cotton plant and its flowers and bolls.

See also the article on "Early Cotton of the Hopi Indians," in *Literary Digest*, 45:1009 (Nov. 30, 1912).

McDonald, R. K.

Texas grew cotton a thousand years ago; records indicate that the staple was produced and worn by the Indians before Europeans came over. *Farm and Ranch*, 47 (4):1, 3, 23 (Jan. 28, 1928). (190)

Reagan, Albert B.

Ancient cotton of the Southwest. *Southern Workman*, 56:426-429 (September, 1927). (191)

See also items 10, 22-23, 37, 41, 44, 48-50, 52, 57, 75, 78, 89, 113, 123, 240, 425, 437-440, 457-458, 460, 470, 476, 480, 520-521.

#### Maple Sugar

Chamberlain, A. F.

The maple amongst the Algonkian tribes. *American Anthropologist*, 4:39-43 (January, 1891). (192)

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Maple sugar and the Indians. *American Anthropologist*, 4:381-383 (October, 1891). (193)

Footnotes.

Henshaw, H. W.

Indian origin of maple sugar. *American Anthropologist*, 3:341-351, illus. (October, 1890). (193a)

See also items 17, 55, 57, 462, 465, 468, 522.



## Potatoes

Ballivián, Manuel Vicente, and Walter Cevallos-Tovar.

Noticia histórica y clasificación de la papa de Bolivia. La Paz, Bolivia, 1914. 22 p., illus.

(194)

A historical and descriptive account of the cultivation, manner of growth, habitat, uses, and varieties of the potato.

An account of this article appears with the title, Geographical Features of Potato Production in Bolivia, in the Geographical Review, 4:318 (October, 1917).

Patrón, Pablo.

La papa en el Perú primitivo. Boletín de la Sociedad Geográfica de Lima, 11:316-324 (July-December, 1902).

(195)

Bibliographical footnotes.

Safford, William Edwin.

The potato of romance and of reality. Journal of Heredity, 16:112-126, 174-185, 217-230 (April-June, 1925).

(196)

Footnotes.

Reprinted in slightly abridged form in the Smithsonian Institution Annual Report, 1925:509-532.

The potato of romance; testimony from prehistoric tombs; true history of the potato; potatoes cultivated by the Indians of southern Chile; introduction of the potato into culture; the potato in Prussia and France; the potato in North America; search for the wild form; summary.

The 31 illustrations include views of the following: Sir Walter Raleigh, legendary introducer of the potato into Europe, depicted in the act of giving the potato to the Irish; John Gerard holding in his hand a flowering branch of Solanum Tuberosum, which he called Battata Virginiana sive Virginianorium & Parras, pretending to have received from Virginia the tuber from which it was propagated, he being responsible for the transfer of the name Potato from Ipomola batatas to Solanum tuberosum and for the confusion of the latter with the Apenauk of Virginia; the original potato, now called the sweet potato; the first published illustration of Solanum Tuberosum from John Gerard's Herbal (1597); the Virginia potato or Apenauk; Apenauk roots or Indian potatoes; Moray or "white chunyo"; ancient foods found with Peruvian mummies; potato vases; Indians drying potatoes for "chunyo"; oldest drawings of the potato, - drawing received by Charles de L'Ecluse from Philippe de Sivry, January 26, 1588, original in Plantin-Moretus Museum at Antwerp; the Great Elector, Frederick William, with his consort, inspecting potatoes planted by his order in the Berlin Lustgarten; Frederick the Great visiting a potato field planted in obedience to his decree; four scenes portraying the measures taken by Parmentier to introduce potato culture into France.

See also items 37, 41, 48-50, 52, 73, 75, 78, 480, 498.

## Tobacco

Chevalier, Auguste.

Les origines du tabac et les débuts de sa culture dans le monde. Paris, Éditions de la Revue Internationale des tabacs, 1927. 21 p. (197)

Découverte du tabac; le tabac au point de vue botanique; classification et hybridation; la culture et l'usage du tabac chez les Indiens; les débuts de la culture européenne en Amérique; mode de culture et de préparation du tabac aux Antilles au XVII<sup>e</sup> siècle; les débuts du tabac en Océanie; les débuts de la culture en Asie; l'origine du tabac en Afrique; introduction du tabac en Europe et spécialement en France; conclusions; bibliographie.

Dale, George Irving.

The earliest known mention of tobacco and its use. *Hispania; A Journal Devoted to the Interests of Teachers of Spanish*, and Published by the American Association of Teachers of Spanish, Stanford University, California, 8:134-135 (March, 1925). (198)

An extract from *La Historia General y Natural de las Indias*, by El Capitán Gonzalo Fernández de Oviedo y Valdés (Seville, 1535).

The brief introductory statement is based on an account of the book in the *Missouri Botanical Garden Bulletin* for December, 1924.

Dam, Cornelia H.

Tobacco among the Indians. *American Mercury*, 16:74-76 (January, 1929). (199)

Dixon, Roland B.

Words for tobacco in American Indian languages. *American Anthropologist*, 23:19-49 (January-March, 1921). Footnotes. (200)

Gilmore, Melvin Randolph.

Some comments on "Aboriginal Tobaccos." *American Anthropologist*, 24:480-481 (October-December, 1922). (201)

A commentary on William Albert Setchell's article entitled "Aboriginal Tobaccos," in *American Anthropologist*, 23:397-414 (October-December, 1921).

Grimes, Katharine Atherton.

The story of tobacco. *Southern Agriculturist*, 61 (9):7, 35; (10):12, 21; (11):16-17 (September, October, November, 1931). (202)

1, The Indian's smoke of incense; 2, A pagan becomes civilized; 3, The Indian weed goes to market.

Pictures, accompanying the first instalment, show the following: pipehead from Ohio mound; steatite pipe from Georgia; town of Secoton, North Carolina, drawn by John White, Roanoke Island, 1586, with a tobacco field at the left just below the center; elephant pipe, Iowa; Toucan pipe of the Mound Builders; deerskin tobacco pouch of the Pima tribe.

Harrington, John Peabody.

Tobacco among the Karuk Indians of California. Washington, U. S. Govt. print. off., 1931. 284 p., illus. (Smithsonian Institution. Bureau of American Ethnology. Bulletin 94). (203)

Bibliography, p. 14-34. Karuk and English text.

Commented on in an article entitled "Cultivation and Use of Tobacco by Tribe of Nonagricultural Indians is Described," in United States Daily, 7 (113):2 (July 15, 1932).

Laufer, Berthold.

Introduction of tobacco into Europe. Chicago, Field Museum of Natural History, 1924. 66 p. (Chicago. Field Museum of Natural History. Anthropological Leaflet 19). (204)

The subject is considered under the following topics: Introduction and early cultivation of tobacco in England, p. 3-21; The great tobacco controversy in England, p. 22-33; Use of tobacco in England, p. 33-48; Tobacco in France, Portugal, Spain, and Italy, p. 48-57; Tobacco in central and northern Europe, p. 57-58; Tobacco in Russia and Turkey, p. 59-65.

Linton, Ralph.

Use of tobacco among North American Indians. Chicago, Field Museum of Natural History, 1924. 27 p., 5 plates (Chicago. Field Museum of Natural History. Anthropological Leaflet 15). (205)

Bibliographical references, p. 27.

The illustrations show the different types of American Indian tobacco pipes.

Lowie, Robert H.

The tobacco society of the Crow Indians. New York, Trustees, 1919., 101-200 p., 13 illus. (American Museum of Natural History, Anthropological Papers, v. 21, part 2). (206)

Bibliography, p. 200.

"On my first visit to the Crow in 1907 I began to take notes on the Tobacco society and in the course of subsequent visits succeeded in accumulating considerable material on the subject. The greater portion of this information was secured at Lodge Grass, Montana; however, a fair amount of check data was obtained in other districts of the Reservation. Continued investigation would surely have added to my knowledge of detail, but it seems that the information here presented suffices to afford an understanding of the essential principles underlying the organization."

Mason, J. Alden.

Use of tobacco in Mexico and South America. Chicago, Field Museum of Natural History, 1924. 15 p., illus. (Chicago, Field Museum of Natural History. Anthropological Leaflet 16). (207)

The use of tobacco in the pre-Columbian and later days by the aboriginal tribes of Mexico and South America.

The six illustrations show tobacco pipes.

Morice, A. G.

Smoking and tobacco among the Northern Denés. American Anthropologist, 23:482-488 (October-December, 1921). (208)

Footnotes.

The paper gives strong grounds for believing that the use of tobacco was unknown to the northern tribes of Canada before the advent of the whites.



Setchell, William Albert.

Aboriginal tobaccos. *American Anthropologist*, 23:397-414 (October-December, 1921). (209)

Footnotes. Also explanation of the folded map, p. 414.

The article is concerned with the different species and their distribution in aboriginal America. It is commented on by Melvin Randolph Gilmore in his note entitled "Some Comments on 'Aboriginal Tobaccos,'" in the *American Anthropologist*, 24:480-481 (October-December, 1922).

Simms, S. C.

Cultivation of "Medicine Tobacco" by the Crows - a preliminary paper. *American Anthropologist*, 6:331-335 (April-June, 1904). (210)

Although announced as a preliminary report it has remained without a sequel.

Singer, Charles.

The early history of tobacco. *Quarterly Review (London)*, 219:125-142 (July, 1913). (211)

Columbus' first sight of the plant, 125-127; The Indians' habit of smoking, 128-130; Jacques Cartier, 130; André Thenet, 131; His 'Singularitez de la France Antarctique,' 131-135; process of 'curing' and 'fermentation,' 134; Introduction into France and Italy, 135; Medicinal properties of the herb, 136, 141; Works on, 137-139; Narcotic properties, 139; Introduction into England, 140; Use as a disinfectant, 141; Amongst native races, 142.

Stahl, Günther.

Zigarre; wort und sache. *Zeitschrift für Ethnologie* (1930) 62: 45-111, illus. (212)

A summary statement by Herbert Baldus in *Social Science Abstracts*, 4:116 (January, 1932).

Einleitung: 1, Abschnitt, Tabakrauchrollen im vorkolumbischen Amerika; 2, Abschnitt, Einführung der Rauchrolle in Europa; 3, Abschnitt, Herkunft und Ableitungen des Wortes Zigarre; 4, Abschnitt, Einführung des Wortes Zigarre für die Rauchrolle Anhang: Anfänge der zigarrenfabrikation in Deutschland. Schluss. Abbildungsverzeichnis. Literaturverzeichnis.

West, George A.

Uses of tobacco and the calumet by Wisconsin Indians. *Wisconsin Archeologist*, 10:5-64 (March-June, 1911). (213)

Bibliographical footnotes and four illustrations.

Wiener, Leo.

The philological history of "tobacco" in America. *Congrès International des Américanistes Compte-rendu de la XXI<sup>e</sup> Session. Deuxième partie tenue à Göteborg en 1924 [International Congress of Americanists, 21st, Goteborg]* p. 305-314, 3 maps. (Göteborg, Museum, 1925). (214)

See also items 8, 10, 14, 16, 22-23, 26, 35, 37, 41-46, 48-50, 52, 55, 57, 106, 415, 437, 446, 449, 462, 465, 468, 477, 480, 502, 505, 521.

## Wild Rice

Albes, Edward.

Rice in the Americas. Bulletin of the Pan American Union, 44: 137-160 (February, 1917).

(215)

Note especially p. 139-143 on the wild rice (Zizania aquatica), indigenous to North America, and an important item in the domestic economy of various Indian tribes. Illustrations showing wild rice tied in bunches or sheaves, a drying rack used to cure the grain after its collection from the fields, and a stave-lined thrashing hole for treading out grain.

Brown, Edgar, and Carl S. Scofield.

Wild rice: its uses and propagation. Washington, 1903. 24 p., illus. (United States Department of Agriculture. Bureau of Plant Industry. Bulletin 50).

(216)

See especially the following sections: Introduction; Distribution and habitat of the plant; Life history and natural propagation; Botanical description; Varieties; Diseases; Harvesting the seed; Preparation of the seed for food purposes; The food value of rice.

A considerable part of this article is reprinted with the same title in the Scientific American Supplement, 56:23268-23269 (Oct. 31, 1903).

Hough, Donald.

An ancient harvest in our own Northwest. Travel, 43 (2):24-26, 48, (June, 1924).

(217)

The article is concerned with the wild rice of the Minnesota lakes, the Chippewas as a link with America's past, and primitive methods in gathering the Indian's winter food.

The illustrations show a Chippewa Indian boy poling a boat through a rice slough while an old squaw bends the long stalks over the gunwales and beats the kernels into the boat with two short sticks; a camp of the rice harvesters; one of the grass granaries constructed to shelter the bags of grain kept for winter use; group of Indians threshing wild rice; an old squaw winnowing the rice to remove chaff.

Jenks, Albert Ernest.

The wild rice gatherers of the Upper Lakes; a study in American primitive economics. United States Bureau of American Ethnology Annual Report (1897-98) 19 (part 2):1013-1137, 19 illus., 2 maps, 9 tables. Washington, Govt. print. off., 1900.

(218)

Bibliography, p. 1126-1133.

Also issued separately, Washington, 1901, as thesis (Ph.D.), University of Wisconsin.

Review by Alexander F. Chamberlain in the Review of Historical Publications Relating to Canada, 7:180-181.

The following are the chapter titles: 1, Botany; 2, Habitat (introduction; habitat according to States; habitat in the wild-rice district; foreign habitat); 3, Indians; 4, Production (introduction; sowing and other early care; tying; curing and drying; thrashing; winnowing; storing; property-right in wild rice; amounts of wild rice harvested); 5, Consumption (nutrition; ways of preparing wild rice for food; periods of consumption); 6, General social and economic interpretations (the wild-rice moon; wild rice in ceremonials and in mythology as found in Indian traditions; dependence of the Indian on wild rice; dependence of the white man on wild rice; Indian population of the wild-rice district); 7, Influence of wild rice on geographic nomenclature.

The noteworthy illustrations show the following: wild-rice bed in Lac Courte Oreille River; a narrow bed of wild rice tied in bunches or sheaves; sickle-shaped sticks used to draw the stalks within reach for tying; wild-rice field after the harvest; drying rack for grain; a section of a drying rack; a stave-lined thrashing hole for treading out the grain; wild-rice kernels before thrashing; thrashing wild rice by means of a churndasher-like stick; Indian woman winnowing wild rice; wild-rice kernels after thrashing and winnowing; birch-bark mococks in which the grain is carried; birch-bark winnowing tray.

Jenness, Diamond.

Wild rice. Canadian Geographical Journal, 2:477-482 (June, 1931).

Photographs of the wild rice gathering, its drying, its threshing, (219) and its winnowing accompany the article.

Summary by Lawrence J. Burpee in Social Science Abstracts, 3:14915 (October, 1931).

Reagan, Albert B.

Wild or Indian rice. Indiana Academy of Science, Proceedings, 1919:241-242. (220)

This brief consideration is based on observations of the author at Nett Lake, Minnesota, where he had charge of the Bois Fort Indian Reservation as superintendent and special disbursing agent from 1909 to 1914.

Riemer, Charlotte.

Wild rice. Nature Magazine, 15:198-199 (March, 1930). (221)

An account of one of the legends concerning the discovery of the food value of wild rice.

Stickney, Gardner P.

Indian use of wild rice. American Anthropologist, 9:115-122 (April, 1896). (222)

Footnotes and one illustration.

Unsigned.

How the Indians harvest wild rice. Scientific American, 108 (16): 365 (April 19, 1913). (223)

A brief statement based on a report from the American consul at Kingston, Ontario, devoted to an account of the wild rice (Zizania aquatica), along the shores of Rice Lake, a few miles north of Cobourg.

See also items 22, 42, 48-50, 52, 55, 57, 305, 316, 434, 462, 465, 468, 511, 516.



## IV

### Miscellaneous

#### Bees

Nordenskiöld, E.

L'apiculture Indienne. Journal de la Société des Américanistes de Paris (1929), 21 (1):169-182.

(224)

Index bibliographique, p. 182; also illustrations and map.

A collection of references to bee-culture in pre-Columbian America and published observations of the author upon apiculture among contemporary South American Indians. The map indicates the distribution of the custom.

See also items 57, 437.

#### Dogs

Allen, Glover M.

Dogs of the American aborigines. Cambridge, Mass., Printed for the Museum, 1920. 431-517 p., 12 plates (Harvard College. Comparative Zoology Museum. Bulletin, v. 63, no. 9).

(225)

An attempt to gather the information the early travelers recorded on the appearance of the dogs of the American aborigines and also to characterize the various breeds that can be distinguished.

The bibliography, p. 504-517, gives "the more important papers on the origin of the dog, and on prehistoric dogs of the New World, as well as references to the aboriginal dogs of America."

The subject is treated under the following sub-heads: Origin of the Domestic Dog; Origin of American Dogs; Breeds of American Aboriginal Dogs; Summary.

See also items 37, 53, 57, 79, 231, 379, 437, 468.

#### Horses

Cardoso, Aníbal.

Breves noticias y tradiciones sobre el origen de la "Boleadora" y del caballo en la República Argentina. Museo Nacional de Historia Natural de Buenos Aires Anales, 28:153-181 (Buenos Aires, 1916).

(226)

Dobrizhoffer, Martin.

An account of the Abipones, an equestrian people of Paraguay. London, J. Murray, 1822. 3 v.

(227)

Translated from the Latin by Sara Coleridge.

An account of the South American horse-complex.

Grinnell, George Bird.

Wild horses and the Indians. Forest and Stream, 71:209-210, 248-249, 290-291 (Aug. 8, 15, 22, 1908). (228)

Stone, Arthur L.

The aboriginal horsetrader. Red Man, 7:19-24 (September, 1914) (229)

Concerning the horses raised by the Indians on the rich blue-joint grass of the western Montana valleys.

Wilson, Gilbert Livingstone.

The Indian and his horse. Farmer, 37:8, 19, 68, 72, 118, 174, 189, 240, 256 (Jan. 4, 11, 18, 25, Feb. 1, 1919). (230)

A series of tales on the origin, breeding, care and training of horses among the Indians in the early days, told by Tseca-matseitcic, or Wolf Chief, to Gilbert L. Wilson.

1, The birth of a colt; 2, Training a colt; 3, Tending the herd and making of bridles; 4, Caring for the herd in the winter camp; 5, Use of horses in warfare.

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The horse and the dog in Hidatsa culture. New York, American museum press, 1924. 125-311 p., illus. (American museum of natural history. Anthropological papers, v. 15, part 2). (231)

During 1908-1918, the author spent from one to two months of each year among the Hidatsa Indians, collecting for the Museum and gathering information as to their culture. This study contains only the portion of his data bearing upon, or associated with, the dog and horse culture-complexes of the tribe.

The section on Horse Culture, p. 141-196, considers the subject under the following sub-headings: Origin; Ideas concerning horses; The colt; Castration; Stallions; Training; Summer pasturing and herding; Winter care of horses; Care of horses on the warpath; Protecting pack horses from magpies; Horsegear; Names for horses.

The section on Dog Culture, p. 196-228, under the following sub-headings: Origin; The puppy; Castration; Feeding; Kennels; The village dogs; Dogs as property; Gathering wood; Collecting wood from the river; Fetching firewood and game by bull-boat; Training a dog; Names and descriptions of dogs; Children ride on a dog travois; Making a dog travois; Dog travois shelter tent.

Wissler, Clark.

American Indian saddles, borrowed, together with other features of horse culture from the Spanish colonization, in the first half of the sixteenth century. American Museum Journal, 16 (8):496-499 (December, 1916). (232)

"Wrapped up in their histories is the whole story of bringing the horse to the New World and in part his domestication in the Old."

The illustrations show a Shoshone Indian saddle, a saddle being made in an Indian camp, and an Indian travois, a primitive vehicle consisting of two trailing poles bearing a net or cross bar for a load.

Wissler, Clark.

The Indian and the horse. American Indian Magazine, 7 (4):20-26 (August, 1920). (233)

A consideration of the origin of the horse in America, and the manner in which the wild herds, bred from the horses of Coronado and De Soto were utilized by the Indians.

The illustrations show the following: old Spanish bits found among the Navajo and the Crow; a woman's saddle used by the Blackfoot; a beaded saddle cloth of buffalo hide from the Teton-Dakota; a man's saddle from the Crow Indians; a finely carved saddle of wood used by the Menomini Indians; Plains Indians in camp, showing a saddle in the making in the foreground, and horses and buffalo in the distance, from a painting by Catlin in 1833, the original being in the Mills Collection; a pad saddle used by the Dakota Indians; a woman's saddle from the Wind River Shoshone; a Thompson Indian saddle from British Columbia; a saddle frame; a crupper for a woman's saddle; a drawing "Moving Camp before the Day of the Horse" by F. N. Wilson; a sketch of a Spanish mount from a drawing by an Aztec in the time of Cortez; drawings showing how the Indian made his stirrup after the old Spanish model.

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The influence of the horse in the development of Plains culture. American Anthropologist, 16:1-25 (January-March, 1914). (234)

The material of this article also appears on p. 252-259 of Source Book on Anthropology, edited by Alfred Louis Kroeber and Thomas Talbot Waterman and issued as California University Syllabus Series, no. 118 (Berkeley, University of California Press, 1920).

See also items 57, 379, 437, 443.

#### Wild Turkeys

Scott, James E.

What we owe the wild turkey. American Forests and Forest Life, 30:661-662 (November, 1924). (235)

Pictures of wild turkeys accompany the article.

Wright, Albert Hazen.

Early records for the wild turkey. Auk, 31:334-358, 463-473; 32:61-81, 207-224, 348-366 (July, 1914-July, 1915). (236)

Bibliographical footnotes.

A synopsis of references to the wild turkey in literature, from the earliest times to about 1870.

Zimmer, John T.

The wild turkey. Chicago, Field museum of natural history, 1924. 15 p., illus. (Field Museum of natural history, Zoological leaflet 6).(237)

See also items 57, 462, 502.



## Agriculture on Indian Reservations in the United States

Abbott, F. H.

Agricultural progress among Indians. Redman, 4:313-318 (April, 1912). (238)

Blakely, C. H.

Made-to-order farmers; 1, The Sioux Indian and the Government. Dakota Farmer, 42:348-349 (May 1, 1922). (239)

"The destiny, past and future, of those tribes of the Sioux Nation located upon the Rosebud and Pine Ridge Reservations," along the western part of the southern border of South Dakota.

Blanchard, C. J.

Uncle Sam pays a debt to Indians: an irrigation system for the Pimas of Arizona. American Review of Reviews, 65:622-624 (June, 1922). (240)

The construction of a diversion dam on the Gila River at Florence, Arizona, completed in 1922, for the irrigation of 62,000 acres, 35,000 of which belong to the Pimas.

The illustrations show the following: A Pima Indian family and their home in the Gila Valley, Arizona; the diversion dam across the Gila River at Florence, Arizona; an automobile engine as motive power for a narrow-gage railway; a Pima Indian with his mule team, cultivating Egyptian long-staple cotton in Arizona.

Bowers, George Ballard.

The original dry-farmers of the Southwest. Southern Workman, 58: 453-458 (October, 1929). (241)

The present day agriculture of the Hopi Indians.

The five illustrations include scenes showing the harvesting of corn, planting corn at a school, and peach orchards on the farm of a modern Hopi.

Chubbuck, Levi.

Indian boarding schools and agricultural education. Washington, Govt. print. off., 1911. 5 p. (242)

Memorial...relative to Indian boarding schools and agricultural stations. Ordered to be printed for the use of the Committee on Indian Affairs, February 16, 1911.

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Teaching agriculture in Indian schools. Native American, 14: 151-152 (March 8, 1913). (243)

Collier, John.

Indians, Inc. Survey, 63:519-523, 547-549 (Feb. 1, 1930). (244)

Concerning the allotment policy.

Collisson, Charles F.

[Agriculture on the Fort Berthold, North Dakota Reservation.]

Minneapolis Tribune, June 22, July 6, 13, 20, 1924.

(245)

Dabb, Edith Manville.

American Indians need missionary agriculturists. World Agriculture, 2:114 (July, 1921).

(246)

Also available in slightly expanded form as an article entitled "Missionary Agriculturists Needed for American Indians" in the Southern Workman, 51:378-381 (August, 1922).

The author is the secretary for Indian schools of the National Y. W. C. A.

Donaghy, James A.

Fitting the Indian in. Nor'-West Farmer, 48 (8):5, 17 (April 20, 1929).

(247)

What the Indians on some of the large reserves in Alberta are doing.

Draper, W. R.

The Indian as a farmer. Harper's Weekly, 45:725 (July 20, 1901).

(248)

The illustrations show a Delaware Indian farmer; Comanche Indian boys hoeing in a melon patch; the Seger Industrial School Colony, Oklahoma Territory; and Washita and Caddo Indians clearing a corn field.

Faris, C. E.

The Indian as a wool grower. National Wool Grower, 15 (11):23-25 (November, 1925).

(249)

The article states that approximately ten per cent of the Indian population of today is engaged in the sheep industry and that the Navajo take the lead in numbers and production.

The three illustrations are of the following: Navajo owner-herder and his sheep; one of the Navajo designs; ewes on the Gicarilla Apache winter range.

Fletcher, Alice C.

Land in severalty to Indians; illustrated by experiences with the Omaha tribe. American Association for the Advancement of Science Proceedings (1884) 33:654-665.

(250)

Forbes-Lindsay, C. H.

The North American Indian as a laborer; his value as a worker and a citizen. Craftsman, 14:146-157 (May, 1908).

(251)

An extensive comment on this article entitled "Redskin as Laborer and Agriculturist," appears in the American Review of Reviews, 37:728-729 (June, 1908).

Haskett, Bert.

Stamping out animal diseases on Indian reservations. Producer; The National Live Stock Monthly, 12 (2): 5, 9 (July, 1930).

(252)

Hermstead, Oscar.

Indians join farm bureau; realizing that government aid will not last forever, they welcome better farming ideas. Dakota Farmer, 43:166-167 (Feb. 15, 1923).

(253)

Concerning the Promise Indian Farmers' Club in the northwestern portion of Dewey County, South Dakota, the joining by six of their group of the Dewey County Farm Bureau, and the agriculture practiced by these Indians.

Heywood, James.

On the aptitude of the North American Indians for agriculture. Royal Statistical Society Journal, 33:456-462 (December, 1870).

(254)

A paper read in September, 1870, before Section F of the British Association at Liverpool.

Hoover, J. W.

The Indian country of southern Arizona. Geographical Review, 19: 38-60 (January, 1929).

(255)

Pimería, land of the Pimas and Papagos; the Gila River and its changed character; the terraces of the Gila River in relation to Pima culture; economic conditions of the Pimas; the Mohave Indians; the Papago and the Papagueria; the mountain country and peoples. There are 15 pictures and 3 maps.

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Tusayan: the Hopi Indian country of Arizona. Geographical Review, 20:425-444 (July, 1930).

(256)

Bibliographical footnotes.

Fields and crops are considered on p. 434-440. Other subjects included are: the villages; the mesas; water and fuel supplies; arts; movements of population, past and present. There are 15 illustrations.

Summary by Charles M. Davis in Social Science Abstracts, 3:14935 (October, 1931).

See also the same author's article on "Navajo Nomadism," in the Geographical Review, 21:429-445 (July, 1931). It has 15 pictures and 1 map.

Institute for government research, Washington, D. C.

The problem of Indian administration; report of a survey made at the request of Honorable Hubert Work, Secretary of the Interior, and submitted to him February 21, 1928. Baltimore, Md., John Hopkins press, 1928. 872 p. (Its Studies in administration).

(257)

The report of the survey made by Lewis Meriam, technical director; Ray A. Brown, Henry Roe Cloud, Edward Everett Dale, Emma Duke, Herbert R. Edwards, Fayette Avery McKenzie, Mary Louise Mark, W. Carson Ryan, jr., and William J. Spillman, who spent 7 months in field work and 8 months in office work investigating present conditions among the Indians.

P. 488-515 consider agriculture, grazing and stock farming, and irrigation of Indian lands.



For a comment on this report; see John Collier's article on "Hammering at the Prison Door," in the Survey, 60:389, 402-405 (July 1, 1928). See also Francis Fisher Kane's article on "East and West: The Atlantic City Conference on the American Indians," in the Survey, 61:472-474 (Jan. 15, 1929). This conference of "over eighty men and women, representing practically all the Indian defense associations in the country, as well as the church organizations,...approved the Meriam report."

The article entitled "Economic Situation of the American Indians," in the Monthly Labor Review, 27:699-703 (October, 1928), is based on this book.

Kinney, J. P.

The administration of Indian forests. Journal of Forestry, 28:1041-1052 (December, 1930). (258)

A paper presented before the Washington section, Society of American Foresters, April 24, 1930.

Historical background of the policy toward Indian lands; present policies and problems in administering the forests owned by the Indians; the administration of grazing on Indian lands.

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An Indian tribe practices forestry; on the Menominee reservation forest practice has brought results. American forests and Forest Life, 34:532-534 (September, 1928). (259)

The Menominee Reservation consists of ten townships along the Wolf River and its tributaries and the south branch of the Oconto River, fifty miles northwest of Green Bay, Wisconsin.

The illustrations show an area left after the selective cutting of 1926 on the Menominee Reservation was completed; the nursery and seed-beds on the Reservation; spruce transplants in the Menominee Nursery.

Leupp, F. E.

Indian land troubles and how to solve them. American Review of Reviews, 42:468-472 (October, 1910). (260)

Lipps, Oscar Hiram.

Laws and regulations relating to Indians and their lands. [Lewiston, Idaho, Lewiston printing and binding co., 1913]. 91 p. (261)

1, Laws and regulations; 2, Digest of decisions relating to Indian affairs; 3, Classified list of Nez Perce Indians.

McKenzie, Fayette Avery.

The Indian in relation to the white population of the United States. Columbus, Ohio, The Author, 1908. 117 p. (262)

Thesis presented to the faculty of the graduate school of Pennsylvania in partial fulfillment of the requirements for the degree of doctor of philosophy.

The following are the chapter titles: 1, Historical review; 2, Indian status: past and present; policy for the future; 3, Results of citizenship; 4, Trust funds; 5, Education: kinds of schools; 6, Educational policy; 7, Results of non-reservation school; 8, Voluntary agencies; 9, Mission and settlement work; 10, The problem.

Meacham, Lotta Allen.

The Crow Indian fair. Independent, 65:656-658 (Sept. 17, 1908). (263)  
The Crow Indian Industrial Fair, on their reservation in Montana.

Moulton, Robert H.

It's Lo, the rich Indian. Hoard's Dairyman, 54:869 (Jan. 11, 1918). (264)  
There are two illustrations.

Preston, Porter J., and Charles A. Engle.

Report of advisors on irrigation on Indian reservations. United States Congress, Senate Committee on Indian Affairs, Survey of Conditions of the Indians in the United States, Hearings..., part 6, January 21, 1930. p. 2210-2661. (265)

Schmeckebier, Laurence Frederick.

The office of Indian affairs: its history, activities and organization. Baltimore, Md., John Hopkins press, 1927. 591 p. (Institute for Government Research. Service Monographs of the United States Government No. 48). (266)

Bibliography, p. 537-580.

Review by Joseph C. Green in the American Historical Review, 34: 857-860 (July, 1929).

In ch. 2, Activities, p. 143 ff., consult such topics as the following: making allotments in severalty; supervision over real estate; education of the Indian (kinds of schools, course of study, etc.); promoting industrial advancement (irrigation, water supply, and drainage; promotion of agriculture and stock raising; promotion of home economics; etc.).

See also the section of the bibliography on education and citizenship, p. 558-560, and on property questions, p. 565-573.

Seymour, Flora Warren.

Our Indian land policy. Journal of Land & Public Utility Economics, 2:93-108 (January, 1926). (267)

The clash of different cultures; status of Indian agriculture; Indian ideas of landed property; conquest and land titles; tribal versus individual rights to land; land tenure under the reservation policy; the attempt to make Indian farmers; land tenure as factor encouraging Indian farming; disposal of surplus lands; the rigidity of Indian customs; leasing Indian allotments; difficulties of allotment policy; land policy, citizenship, and liquor regulation; the Burke Act of 1906; conditions of land ownership in fee simple; remnants of tribal property; sales of Indian lands; result of allotment policy; persistence of tribal customs; present status of Indian land tenure; results of policy of making Indian farm owner-operators.

Sipe, Susan B.

The work of the Bureau of plant industry, United States Department of Agriculture, in its relation to agricultural instruction in Indian schools. National Education Association, Journal of Proceedings and Addresses, 1905:938-947. (268)

Smith, John F.

Interior Indians' agricultural efforts; the native Indians of British Columbia are astonishing the whites by their progressive methods. *Agricultural Journal* [British Columbia], 5:112 (June, 1920). (269)

Sniffen, Matthew K.

Agriculture and the Indians of North America. *World Agriculture*, 1:69 (January, 1921). (270)

The author is secretary of the Indian Rights Association.

Steece, Henry M.

Corn culture among the Indians of the Southwest. *Natural History*, 21:414-424 (July-August, 1921). (271)

This article is reprinted in the *Indian School Journal*, 22 (3):9-19 (Chilocco, Oklahoma, October, 1922), with illustrations.

Description of the agricultural methods of the pueblo and the nomadic Indians of Arizona and New Mexico.

The illustrations show the following: charred corn from pit in pre-historic communal dwelling on mesa north of Los Alamos Cañon, New Mexico; hill of corn at Zuñi Pueblo, New Mexico; agricultural implements of the natives of Laguna Pueblo, the hoes having been fashioned from old shovels and the handles made of piñon; the Heppatinna a Zuñi shrine in the midst of a large Indian cornfield, the structure being consecrated to the center of the earth over which spot it is supposed to stand; a Navajo's corn crop; a Hopi Indian demonstrating his method of corn planting; Laguna Indian husking corn into a sacking apron; Pima granaries at Sacaton, Arizona; corn drying on the house tops at San Felipe Pueblo, New Mexico; corn in a dooryard at Laguna; field of Hopi corn and melons at the foot of the First Mesa, Polacca, Arizona, produced without irrigation; exterior view of a kiva or estufas, underground rooms where the secret fraternities hold their ceremonials; Hopi Indians making bread.

Steele, G. F.

Indians good farmers; Blood Indians in southern Alberta started farming a few years ago and have made good. *Nor'-West Farmer*, 44 (20):56-57 (Oct. 20, 1925). (272)

United States Bureau of the Census.

Agriculture on Indian reservations. 12th Census, 1900, v. 5, p. 717-740. (273)

Unsigned.

Indian agricultural fairs. *Red Man*, 8 (4) December, 1915. (274)  
The entire number is devoted to the subject indicated by the title.

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Indian allottee acquires full equitable estate. *Michigan Law Review*, 19:222-223 (December, 1920). (275)



Unsigned.

Indian fairs. Outlook, 111:591-592 (Nov. 10, 1915). (276)

Indian fairs as related to the progress that modern Indians are making in agriculture. The first Indian fair was held on the Crow Reservation in Montana in the fall of 1905; in 1915, nearly one hundred fairs were held. On page 108 of the same issue there is a picture of an Indian exhibitor and exhibits at an agricultural fair.

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Indian forests. American Forestry, 36:223 (April, 1930). (277)

An editorial on the forested lands belonging to the Indians.

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Land tenure and the organization of agriculture in Indian reservations in the United States. International Review of Agricultural Economics, 8 (5):63-76 (May, 1917). (278)

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Navajo fair. Red Man, 7:129-132 (December, 1914). (279)

Extracts from this article are reprinted with the title "Navajo Fair," in the Bulletin of the Pan American Union, 41:400-405 (September, 1915), with five illustrations. The fair described is held at the Government school and agency on the San Juan River in New Mexico.

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Severalty bill and Indian lands. Outlook, 81:1045 (Dec. 30, 1905). (280)

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A visit to primitive farmers. Farmer's Advocate and Home Magazine, 65:1192 (Aug. 7, 1930). (281)

A report of the comments of Mary McLean who spent many years among the Hopi Indians of Arizona.

Wenz, Alfred.

In the heart of the corn country. Dakota Farmer, 36:1068-1070 (Oct. 15, 1916). (282)

The corn growing of the Mandan Indians on the Upper Missouri River.

Wilson, Owen.

Rescuing a people by an irrigating ditch; the making over of the Pima Indians. World's Work, 22:14815-14817 (September, 1911). (283)

Three of the pictures are of Pima Indian farmers, one is of a school house.

Wojta, J. F.

An Indian farmers' institute. Hoard's Dairyman, 57:1141 (June 27, 1919). (284)

The two-day Indian Farmers' Institute held at Lac du Flambeau, Vilas County, Wisconsin, in April, 1919.

The illustration shows Indians taking lessons in judging seed corn and cutting seed potatoes.

Wojta, J. F.

Lac Du Flambeau Indian reservation. Hoard's Dairyman, 58:174 (Aug. 22, 1919).

(285)

The illustration shows Indians judging dairy cows at an Indian farmers' institute.

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Wisconsin Indians in farming. Wisconsin Archaeologist, 6:115-119 (September, 1927).

(286)

A résumé of what has been done in the way of giving the Indians in Wisconsin help in bettering their farming methods. Members of the Menominee tribe started the movement by making a request of the Agricultural Extension Service in 1914.

See also items 104, 425, 428, 436, 447, 466, 522-523.

UNCULTIVATED PLANTS USED BY THE AMERICAN INDIANS

I

Food and Industrial Plants

Alcocer, Gabriel V.

Catálogo de los frutos comestibles Mexicanos. Anales del Museo Nacional de Mexico (series 2) 2 (1905):413-488. (287)

Altamirano, Fernando.

Historia natural aplicado de los antiguos Mexicanos. Anales del Instituto Médico Nacional Mexico, 2:261-272 (December, 1896). (288)

Trabajo leído en el XI Congreso Internacional de Americanistas, reunido, en la Ciudad de México del 15 al 23 de Octubre de 1895.

Andrade, Alfredo Ant de.

Estudo das materias corantes de origem vegetal em uso entre os indios do Brazil e das plantas de que procedem. Archivos Museum Nacional, Rio de Janeiro, 28:175-199 (December, 1926). (289)

Bibliographical footnotes.

Vernacular names are used and there are three colored plates.

Barrows, David Prescott.

The ethno-botany of the Coahuilla Indians of Southern California. Chicago, University of Chicago press, 1900. 82 p. (290)

A dissertation submitted to the faculties of the graduate schools of art, literature, and science, in candidacy for the degree of doctor of philosophy in June, 1897.

Bibliographical footnotes.

Note particularly ch. 5, Plant Materials Used in Manufactures and Arts, p. 45-50; ch. 6, The Gathering, Preparation, and Storing of Foods, p. 50-54; ch. 7, Food Plants of the Coahuilla Indians, p. 54-73; ch. 7, Drinks, Narcotics, and Medicines, p. 53-82.

P. 25-31, 54-70 are reprinted on p. 223-238 in Source Book in Anthropology, edited by Alfred Louis Kroeber and Thomas Talbot Waterman, and issued as California University Syllabus Series, no. 118 (Berkeley, University of California Press, 1920).

Barry, J. Neilson.

Use of soil products by Indians. Oregon Historical Quarterly, 30:43-52 (March, 1929). (291)

Bibliographical footnotes.

From an address read before the Sons of the American Revolution at Portland, Oregon, January 11, 1929.

Oregon Territory is the region covered by the study.



Bartram, William.

Observations on the Creek and Cherokee Indians, by William Bartram, 1789. With prefatory and supplementary notes, by E. G. Squier. Transactions of the American Ethnological Society (1853) 3:1-81. (292)

See the following sections: Disease and Remedies, p. 43-47; and Food, and Means of Subsistence, p. 47-50.

Beckwith, Martha Warren.

Notes on Jamaican ethnobotany; 1, Plant medicines; 2, Food plants. Poughkeepsie, N.Y., Vassar college, 1927. 47 p. (Folklore foundation publications, no. 8). (293)

Index to references, p. 1-2.

Benoist, Raymond.

Une nouvelle espèce de Brunfelsia (Solanacées), plante magique des Indiens du Haut-Amazone. Bulletin de la Société Botanique de France, 75:294-296 (March-April, 1928). (294)

Brunfelsia tastevini, nov. sp.; vernacular name, keya-honé.

Bertoni, Guillermo.

La yerba mate; una planta simbolica de America. Annaes do XX Congresso Internacional de Americanistas realizado no Rio de Janeiro, de 20 a 30 de Agosto de 1922 [International Congress of Americanists, 20th, Rio de Janeiro, 1922], 1:91-93 (Rio de Janeiro, Imprensa nacional, 1924). (295)

Bourke, John G.

The folk-foods of the Rio Grande Valley and of northern Mexico. Journal of American Folk-lore, 8:41-71 (January-March, 1895). (296)

Brown, Robert (of Campster)

On the vegetable products used by the North-West American Indians as food and medicine, in the arts, and in superstitious rites. Transactions of the Botanical Society of Edingburgh (1868) 9:378-396. (297)

Also printed in the Pharmaceutical Journal, 2d series, 10:89-94, 168-174 (August and September, 1868).

Bushnell, David I.

The Choctaw of Bayou Lacomb, St. Tammany Parish, Louisiana. Washington, Govt. print. off., 1909. 35 p., illus., map. (Smithsonian Institution. Bureau of American Ethnology. Bulletin 48). (298)

See the following sections: Food, supply and preparation, p. 8-10; Baskets, p. 13-15; Medicinal plants and treatment, p. 23-24. Plate 7 shows an old mortar made of black gum; plate 8, an Indian woman pounding corn in a wooden mortar.

Candolle, Alphonse de.

Origin of cultivated plants. New York, D. Appleton & co., 1902. 468 p. (299)

Original French edition, 1883; first American edition, 1885.

Review by Asa Gray and J. Hammond Trumbull in the American Journal of Science, 3d series, 25:241-255 (April, 1883).

Chamberlain, Lucia Sarah.

Plants used by the Indians of Eastern America. American Naturalist, 35:1-10 (January, 1901).

(300)

List of the works from which the information was obtained, p. 9-10.

The initial sentence reads: "The following list of plants used by the North-American Indians inhabiting the country east of the Mississippi River was compiled during a course given to students of Radcliffe College in 1899-1900, at the Peabody Museum, by Dr. Frank Russell of the Department of American Archaeology and Ethnology of Harvard University." The English common names are given; they are arranged according to their uses under the name of the Indian tribe.

Chamberlin, Ralph V.

The ethno-botany of the Gosiute Indians of Utah. Academy of Natural Science of Philadelphia Proceedings (1911) 63:24-99.

(301)

Also issued under the same title as American Anthropological Association Memoir, 2 (5):329-405 (May, 1911). Here the subject is considered under the following sub-headings: vegetal products used as food; beverages; chewing-gums; smoking; domestic objects; habitations; medicinal plants. P. 360-405 give a list of plants according to scientific names, with popular and Gosiute equivalents.

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Some plant names of the Ute Indians. American Anthropologist, 11:27-40 (January, 1909).

(302)

Lists of plants according to scientific names, p. 32-37;  
Alphabetical list of plants according to Ute names, p. 37-40.

Chesnut, Victor King.

Plants used by the Indians of Mendocino County, California. Washington, 1902. 114 p., illus. (United States Department of Agriculture. Division of Botany. Contributions from the United States National Herbarium, 7 (3):295-408).

(303)

Claude, Joseph.

Plantas tintóreas de Araucania. Revista Chilena de Historia Natural (1929) 33:364-374, illus.

(304)

Clinton, DeWitt.

An introductory discourse, delivered before the literary and philosophical society of New York on the fourth of May, 1814. New York, Published by David Longworth, 1815. 143 p.

(305)

See the following: Note 32, p. 127-128, on food plants used by Indians; note 33, p. 128-131, on wild rice; note 34, p. 132-133, on wheat; note 35, p. 133-134, on fodder grasses; note 36 - note 37, p. 134-138, on geographical distribution and introduction of plants.

Coville, Frederick Vernon.

Directions for collecting specimens and information illustrating the aboriginal uses of plants. Washington, Govt. print. off., 1895. 8 p. (United States National Museum Bulletin 39, Part J).

(306)

General remarks; material to be collected; description of specimens, and notes; aboriginal uses of plants.

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Notes on the plants used by the Klamath Indians of Oregon. Washington, 1897. 22 p. (United States Department of Agriculture. Division of Botany. Contributions from the United States National Herbarium, 5 (2):87-108).

(307)

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Wokas, a primitive food of the Klamath Indians. United States National Museum Annual Report, 1902:725-739, 13 illus.

(308)

A detailed record of the methods used by the Indians in harvesting and preparing their crop of wokas, or waterlily seed, on Klamath Marsh which contains about 10,000 acres of a solid growth of wokas.

The illustrations include views of the following: a wokas gatherer's camp; wokas gatherer's boat and pole; one day's harvest of two women; wokas on a mealing stone; wokas drying pile and implements; Indian extracting wokas seeds.

Dahlgren, B. E.

Cacao. Chicago, Field Museum of Natural History, 1923. 14 p., illus. (Chicago. Field Museum of Natural History. Botany Leaflet 4).

(309)

"Long before the discovery of the American continent, cacao was used and cultivated from Mexico to Ecuador. It is thus a distinctly American contribution to the world's food resources."

Densmore, Frances.

Chippewa customs. Washington, U.S. Govt. print. off., 1929. 204 p., map, 116 illus. (Smithsonian Institution. Bureau of American Ethnology. Bulletin 86).

(310)

Authorities cited, p. 195-196.

Note particularly p. 39-44 on food, and p. 119-131 on the cycle of work during the year.

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Uses of plants by the Chippewa Indians. United States Bureau of American Ethnology Annual Report (1926-27) 44:274-397, 35 plates. Washington, U.S. Govt. print. off., 1928.

(311)

Review by T. F. McIlwraith in the Canadian Historical Review, 10:361 (December, 1929); by Willoughby M. Babcock in Minnesota History, 10:440-441 (December, 1929).

Most of the monograph is devoted to plants used as food and medicine, plants used as dyes, plants used as charms, and plants used in useful and decorative arts.



Fewkes, Jesse Walter.

A contribution to ethnobotany. *American Anthropologist*, 9:14-21 (January, 1896). (312)

A fragment of a study originally undertaken by J. G. Owens and J. Walter Fewkes on the foods and resources of the Hopi Indians.

Franciscans, Saint Michaels, Arizona.

An ethnologic dictionary of the Navaho language. Saint Michaels, Ariz., Franciscan Fathers, 1910. 536 p., illus. (313)

Classified plant list, p. 179-203; Navaho foods, p. 204-220; sheep raising, p. 257-259; agriculture, p. 259-270.

Gerard, W. R.

Plant names of Indian origin. *Garden and Forest*, 9:250-253, 262-263, 282-283, 292-293, 302-303 (June 21, July 1, 15, 22, 29, 1896). (314)

Gilmore, Melvin Randolph.

Dispersal by Indians a factor in the extension of discontinuous distribution of certain species of native plants. *Michigan Academy of Science, Arts and Letters, Papers* (1931) 13:89-94. (315)

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Indian food products from native wild plants. *Good Health*, 61 (9): 18-19, 46; (10):12-13, 28 (September and October, 1926). (316)

The article deals largely with wild rice (*Zizania aquatica*); seeds of wild sunflower (*Helianthus annuus*); ground bean (*Falcata comosa*); and all kinds of native nuts. There are 6 illustrations.

It is summarized under the title, Corn as the Indians Cooked It, in the *Literary Digest*, 90 (8):29 (Aug. 21, 1926), with 2 illustrations. The one shows the green ears, still in their husks, being laid on a bed of willow poles; the other, the roasting process.

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The Indian garden. *Indian Notes*, 3:209-213 (July, 1926). (317)

The American Ethnobotanical Garden was begun in 1925 by the Museum of the American Indian, Heye Foundation, on a tract of land given by Archer M. Huntington in the Bronx near Pelham Bay Park at the suggestion and under the direction of Dr. Gilmore. There are three illustrations.

The University of Michigan is now developing a similar botanical museum. It is known as the Ethnobotanical Museum.

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Indian lore and Indian gardens. Ithaca, N.Y., Published under the auspices of the Coordinating council on nature activities by the Slingerland-Comstock co., [1930.] 1 v., illus., maps. (318)

Note the following lists: native plants as used by Indians, p. 32-33; nuts and seeds, p. 34-35; native wild fruits, p. 35-36; plants used for making tea-like beverages, p. 36; sugar sources, p. 37; plants used for perfumes, p. 37; plants used for dyes and stains, p. 38; fiber plants, p. 38; gums and resins, p. 38; some plant remedies, p. 38; and the list of useful books for understanding of Indian life, p. 39.

Gilmore, Melvin Randolph.

Indians and conservation of native life. *Torrey*, 27:97-98 (November-December, 1927). (319)

The fundamental difference in the attitude of mind of white people and of Indians with regard to the indigenous fauna and flora.

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Some native Nebraska plants with their uses by the Dakota. *Nebraska State Historical Society Collections* (1913) 17:358-370. (320)

The result of inquiry among the Oglala Dakota on Pine Ridge Reservation, August, 1912.

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A study in the ethnobotany of the Omaha Indians. *Nebraska State Historical Society Collections* (1913) 17:314-357. (321)

Economic plants by families, p. 337-349.

Plants arranged according to uses among the Omaha, p. 349-353.

Bibliography on economic botany of American aborigines, p. 353-357.

A thesis submitted to the faculty of the University of Nebraska as part of the requirements for the degree of master of arts, June, 1909.

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Uses of plants by the Indians of the Missouri River region. *United States Bureau of American Ethnology Annual Report* (1911-12), 33:43-154. Washington, Govt. print. off., 1919. (322)

Bibliography, p. 153-154.

Also issued separately.

This monograph is an attempt to ascertain the relation of the native people of the plains to one phase of their indigenous physical environment. The region specially represented is Nebraska, and the Teton, Dakota, Omaha, Ponka, and Pawnee localities. For a review see A. L. Kroeber in the *American Anthropologist*, 22:384-385 (October-December, 1920).

The article by O. A. Stevens entitled "Uses of Plants by the Indians," in *Science*, 52:99-101 (July 30, 1920), is mainly a review of the study by Dr. Gilmore here cited.

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Vegetal remains of the Ozark bluff-dweller culture. *Michigan Academy of Science, Arts and Letters, Papers* (1930) 14:83-102, 4 illus. (323)

List of the species of seed-bearing plants in taxonomic order by families from the lower to the higher, p. 93-102.

Part of the findings of the archaeological explorations conducted on the upper course of the White River in Carroll and Benton counties in Arkansas, and on the Elk River in McDonald County, in the southwest corner of Missouri in the spring and summer of 1922 and the early part of 1923 by the Museum of the American Indian, New York.

- Goddard, Pliny Earle.  
Life and culture of the Hupa. Berkeley, University press, 1903.  
88 p., illus. (California. University. Publications in American  
Archaeology and Ethnology, v. 1, no. 1). (324)  
See p. 21-32 on food.
- Gore, James Howard.  
Tuckahoe, or Indian Bread. Smithsonian Institution Annual  
Report, 1881:687-701, 5 illus. (325)  
Bibliography of tuckahoe, p. 700-701. Also issued separately.
- Gorman, Martin W.  
Economic botany of Southeastern Alaska. Pittonia (1896) 3:65-85. (326)
- Harms, Hermann.  
Übersicht der Bisher in Altperuanischen Gräbern Gefundenen  
Pflanzenreste. Festschrift Eduard Seler, p. 157-186, illus.  
(Stuttgart, Verlag von Strecker und Schröder, 1922). (327)
- Harris, George Henry.  
The Indian bread root of the Senecas. Waterloo, N.Y., Observer  
electric print, 1890. 8 p. (328)  
Probably *Arum triphyllum*.
- 
- Root foods of the Seneca Indians. Rochester Academy of Science  
Proceedings, 1:106-117, illus. (January, 1889, to June, 1891). (329)
- Harshberger, John W.  
Phytogeographic influences in the arts and industries of  
American aborigines. Bulletin of the Geographical Society of  
Philadelphia, 4:137-153 (April, 1906). (330)
- 
- The purposes of ethno-botany. Botanical Gazette, 21:146-154  
(March, 1896). (331)  
"To the World's Fair in 1893 was brought a unique collection  
of objects obtained through the liberality of Mr. Hazzard by the  
Wetherill brothers in the Mancos canon, Colorado. Never before  
in the history of American archaeology had such a complete series  
of objects been brought together for study and comparison. The  
University of Pennsylvania was fortunate in securing through the  
efforts of Mr. Culin the loan of the entire collection, which  
stands univalled in showing a large series of interesting things;  
plant products in the form of food, dress, and household utensils  
being very largely represented. It is to the description of the  
plants and plant products that this article is directed."  
The article is also in the American Antiquarian Society Pro-  
ceedings (1896) 18:73-81. This version was given as a lecture be-  
fore the University Archaeological Association, December 4, 1895.



Haskin, Leslie L.

Frontier food; ipo, or yampa, sustained the pioneers. Nature Magazine, 14:171-172 (September, 1929). (332)

The illustration shows a statue of Sacagawea, the Indian woman guide of Lewis and Clark, in Portland, Oregon. She introduced the carums and was the first to disclose the tastiness of these plants to white men. The fruit of three species of Umbelliferae: *Carum killoggii*, *C. gairdneri* and *C. oreganum*, was used by Klamath Indians, who originally called it "kash."

Havard, Valery.

Drink plants of the North American Indians. Bulletin of the Torrey Botanical Club, 23:33-46 (Feb. 29, 1896). (333)

The plants are considered under the following heads: those yielding alcoholic liquors; those yielding stimulating, exhilarating or intoxicating principles other than alcohol; and those furnishing palatable juices, or, by infusion, pleasant beverages more or less used to quench thirst.

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The food plants of the North American Indians. Bulletin of the Torrey Botanical Club, 22:98-123 (March 27, 1895). (334)

Herrera, Fortunato L.

Fitolatría indígena; plantas y flores simbólicas de los Inkas. Inca, 1:440-446 (April-June, 1923). (335)

Hough, Walter.

The environmental interrelations in Arizona. American Anthropologist, 11:133-155 (May, 1898). (336)

List of plants utilized by Hopi Indians arranged according to uses, p. 142-150; Systematic list of species, p. 152-155.

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The Hopi in relation to their plant environment. American Anthropologist, 10:33-44 (February, 1897). (337)

The plants, considered and later enumerated, are grouped into a number of classes, according to their uses for food, house building, dress and adornment, domestic life, arts, agriculture and forage, medicine, religion, and folk-lore.

Hrdlička, Alš.

Physiological and medical observations among the Indians of Southwestern United States and Northern Mexico. Washington, Govt. print. off., 1908. 460 p., illus. (United States Bureau of American Ethnology. Bulletin 34). (338)

Bibliography, p. 407-425.

See Food, p. 19-26; and Native foods, p. 257-266.

Joyce, T. A.

Yerba maté; the tea of South America. Pan-American Magazine, 33: 307-328 (November-December, 1921).

(339)

Bibliography of the works to which reference is made in the paper, p. 327-328.

A historical inquiry into the origin and use of yerba maté. There are illustrations.

Lampman, Ben Hur.

Savage gardens, nature's crop for her nut-brown children. Nature Magazine, 12:32-34 (July, 1928).

(340)

Concerning the *Sagittaria latifolia*, or arrowhead lily, the famous wapattoo of the Multnomah Indians. Its tubers were used for food. Two of the illustrations are of the lily; the third is of its tubers.

Laufer, Berthold.

The American plant migration. Scientific Monthly, 28:239-251 (March, 1929).

(341)

A careful statement of the significance of plant cultivations in the development of mankind. In reference to the United States, the author recognizes four strata of plant-cultivations: (1) those peculiar to the aborigines of America, subsequently adopted by the white settlers, who also succeeded in cultivating wild species of North America; (2) plants introduced from England in colonial times; (3) American plants introduced from the West Indies in the seventeenth and eighteenth centuries; (4) numerous plants brought over from China and Japan from the eighteenth century onward to the present day. Detailed attention is given to the potato and the pineapple.

Lea, Frank T.

Indian bread makers in Yosemite. Overland, 64:24-25 (July, 1914).

(342)

A brief account of the process of collecting and preparing acorns for food by the Yosemite Indians, a process which has been followed perhaps for centuries. The illustration shows one of the Indian breadmakers posing in her cabin.

Lloyd, John Uri.

Origin and history of all the pharmacopoeial vegetable drugs, chemicals and preparations with bibliography. Vol. 1, Vegetable drugs. Cincinnati, Caxton press, 1921. 449 p., illus.

(343)

Bibliography, p. 357-424.

Prepared under the auspices of and published by the American Drug Manufacturers' Association, Washington, D. C.

Consult table of contents and index for references to pertinent material.

Loesener, Theodor.

Über Maya-Namen und Nutzenanwendung Yucatekischer Pflanzen.  
Festschrift Eduard Seler, p. 321-343 (Stuttgart, Verlag von  
Strecker und Schröder, 1922).

(344)

Maldonado, Angel, and Eduardo Maldonado.

Contribucion al estudio de los productos vegetales que se en-  
cuentran en los "restos de cocina" precolombinos de tambo Inga.  
Archivos de la Asociación peruana para el Progreso de la Ciencia  
(1921) 1:118-130, 7 plates.

(345)

Bibliografia, p. 130.

Marie-Victorin, Frère.

L'identite du Poglus (Heracleum Lanatum Michx.). Naturaliste  
Canadien, 46:121-124 (December, 1919).

(346)

Mason, Otis Tufton.

Migration and the food quest; a study in the peopling of America.  
Smithsonian Institution Annual Report, 1894:523-539.

(347)

A paper read before the Anthropological Society of Washington,  
May, 1894.

Mason, Robert Lindsay.

Tree myths of the Cherokees. American Forests and Forest Life,  
35:259-262, 300 (May, 1929).

(348)

Six illustrations accompany the article.

Mejía Xesspe, M. T.

Kausay-Alimentación de los Indios. Wira Kocha, 1:9-24 (January,  
1931).

(349)

Summary by L. L. Bernard in Social Science Abstracts, 3:14975  
(October, 1931).

Merriam, C. Hart.

The acorn, a possibly neglected source of food. National Geographic  
Magazine, 34:129-137 (August, 1918).

(350)

Most of the article is devoted to the use which the Indians made  
and make of acorns and the way they prepared them. There are eight  
illustrations.

Mildbraed, J.

Von den Bulus genutzte wildwachsende pflanzen des Südkameruner  
waldlandes. Leipzig and Berlin, Wilhelm Engelmann, 1913. 43 p.  
(Notizblatt des Königl. Botanischen Gartens und Museums zu Berlin-  
Dahlem (Post Steglitz), sowie der botanischen Zentralstelle für die  
deutschen Kolonien. Appendix XXVII, 11. Oktober, 1913).

(351)

Morton, F. S.

The Alaskan Indians' bill of fare. Rural New Yorker, 76 (4417):  
234 (Feb. 17, 1917).

(352)

The following are the sub-headings: The diminishing Aleuts;  
Wild vegetables; Fish and meat; Seaweed and berries; Drying fish;  
Housing conditions; A luxury in food.



Moseley, Edwin Lincoln.

Some plants that were probably brought to northern Ohio from the west by Indians. Michigan Academy of Science, Arts and Letters, Papers (1931) 13:169-172.

(353)

Newberry, J. S.

Food and fiber plants of the North American Indians. Popular Science Monthly, 32:31-46 (November, 1887).

(354)

Palmer, Edward.

Plants used by the Indians of the United States. American Naturalist, 12:593-606, 646-655 (1878).

(355)

Also in American Journal of Pharmacy, 50 (4th series, 8) (11): 539-548, 586-592 (November, 1879).

An earlier version of this article appeared under the title Food Products of the North American Indians, in the United States Department of Agriculture Report, 1870:404-428, 10 plates. The paper here cited includes all the additional matter that has since come under his observation.

Pittier de Fabr ga, Henry F.

Ethnographic and linguistic notes on the Paez Indians of Tierra Adentro, Cauca, Colombia. American Anthropological Association Memoir, 1:301-356 (June, 1907).

(356)

Food, cultivated and other useful plants, p. 321-324.

There are 9 plates including a map.

Powers, Stephen.

Aboriginal botany. California Academy of Sciences Proceedings (1873-74) 5:373-379.

(357)

"All the forms of the vegetable world which the aborigines use for medicine, food, textile fabrics, ornaments, etc." are considered as coming under the word botany as employed in this paper.

See also ch. 38, Aboriginal Botany, p. 419-431, of the same author's Tribes of California (Washington, Govt. Print. Off., 1877), issued by the United States Department of the Interior's United States Geographical and Geological Survey of the Rocky Mountain Region as v. 3 of his Contributions to North American Ethnology.

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Ethnobotany of the Meskwaki Indians. Milwaukee Wis., Published by order of the trustees, 1928. 177-326 p., illus. (Bulletin of the Public museum of the city of Milwaukee. v. 4, no. 2, April 7, 1928). (375)

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concerning which there are special beliefs; plants mentioned in  
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Safford, William Edwin.

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Footnotes and 11 illustrations.  
Sub-title: So-called "sacred mushroom," or teonanacatl, still in use by the Indians of Mexico and the United States, producing hallucinations of a remarkable nature, is identified with the peyotl zacatecensis, or devils' root of ancient Mexico, and the "mescal button" of Texas.

Based on a paper entitled "Identification of the Teonanacatl, or 'Sacred Mushroom' of the Aztecs with the narcotic cactus, *Lophophora*, and an account of its ceremonial use in ancient and modern times," read at a meeting of the Botanical Society of Washington on May 4, 1915.



The sub-captions are as follows: Methods of exorcism; Early history of Teonanacatl; Determination of the drug; Identity with the narcotic peyotl; Raiz diabolica, or devil's root; Cacalia also called peyotl; The Genus Lophophora; Lophophora williamsii; Geographical distribution; Chemical history of the drug; Physiological action; Ceremonial use by the Indians; Among the Tarahumaris; Use by the Huicholes of Jalisco; Present use in the United States; The Peyote society; Among the Omaha Indians; Use in Ancient Mexico; Summary.

Safford, William Edwin.

Daturas of the Old World and New; an account of their narcotic properties and their use in oracular and initiatory ceremonies. Smithsonian Institution Annual Report, 1920:537-567, 26 illus.

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The topics considered are: modern flood-water farming; fields below escarpments; fields at the "arroyo mouth;" fields in main valleys; contrast between Indian and Spanish farming; effect of the recent epicycle of erosion; dry farming of beans as a new industry.

Three views of cornfields in Gutierrez Canyon, Sandia Mountains, Bernalillo County, New Mexico; one of bean field near Sedillo, Bernalillo County; two of fields in Arroyo en Medio.

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Bushnell, David I., Jr.

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Cairns, Huntington.

A divine intoxicant. Atlantic Monthly, 144:638-645 (November, 1929). (432)

"The peyote cactus (*Lophophora williamsii* or *Lophophora lewinii*) is a spineless cactus shaped like a carrot or turnip. The mesoal button is the dried flowerlike top of the cactus. The drug mescal should not be confused with the Mexican drink of the same name... The name 'peyote' is from the Aztec *peyotl*..."

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A study of the maize grown by the Hopi, Zuni, and Navajo Indians of New Mexico and Arizona bringing to light an adaptive character that promises to be of economic importance in dry regions where germination is uncertain.

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Conzemius, Eduard.

Ethnographical survey of the Miskito and Sumu Indians of Honduras and Nicaragua. Washington, U.S. Govt. print. off., 1932. 191 p., illus. (Smithsonian Institution. United States Bureau of American Ethnology. Bulletin 106). (437)

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Peruvian fabrics. New York, The Trustees, 1916. 105-191 p., illus. (*Anthropological Papers of the American Museum of Natural History*, v. 12, pt. 4). (438)

Crawford, Morris De Camp.

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(Anthropological Papers of the American Museum of Natural History, v. 12, pt. 3). (439)

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"The object of this paper is to give some idea of the technical side of the fabrics found in the graves of Coastal Peru. The nature of design and color will be considered only in this relation."

Cummings, Byron.

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"The field-work on which this study is based was undertaken during the summer of 1929, and I am indebted to the Commonwealth Fund of New York and to the Southwest Society for financial assistance."

Plate 42 includes three pictures of Hopi cornfields; plate 43, a picture of a typical corn clump, one of a bean plot, and one of a squash vine with an individual windbreak; plate 44, a picture of an irrigated garden, and one of chile and onion beds.

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